Vol. 10 APRIL, 1928 No. 1

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THE PAPER INDUSTRY

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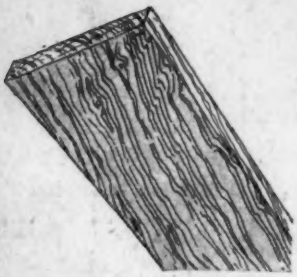
The Monthly Educational Journal of the Paper Industry

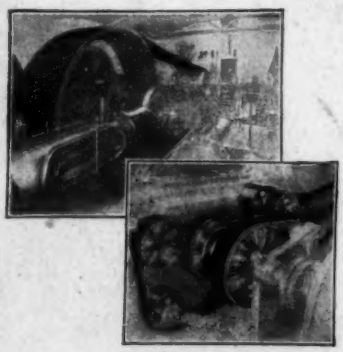


An oaken plank

will hardly do to wrap around a pulley

Then WHY *belting "stiff-as-a-board"—*

When pliability spells longer life—and greater power capacity?



Pliability is a factor in longer life for belts on any type of drive. The large Schieren Belt above is more than 23 years old. A stiff, starchy belt on a similar drive in the same plant is going to pieces after only a few years' service.

If the dirt and grit that accumulate in leather fibres during the tanning process are not removed by scouring the result is a very stiff, harsh piece of leather and a shorter lived belt. It is literally as stiff-as-a-board, and lacks the one thing essential for long life, pliability.

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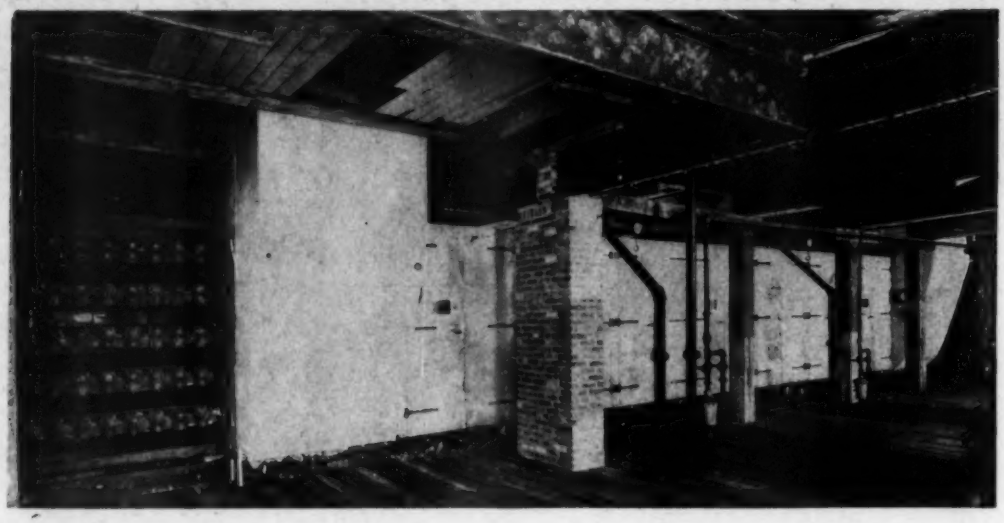

The above is the side view of a Coe Continuous Roller Dryer in the plant of the John A. Manning Paper Company at Troy, N. Y. This dryer has a daily (24 hr.) capacity of ten tons of pressed board.

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The BELOIT

Vol. 10—No. 1

THE PAPER INDUSTRY

A. SCOTT DOWD
Editor

A MONTHLY EDUCATIONAL JOURNAL
Devoted to the Interests of the Pulp and Paper Industry
THOMAS J. KEENAN, Associate Editor, 18 East 41st Street, New York City

MEMBER AUDIT BUREAU OF CIRCULATIONS

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Fundamental Market Factors Strong

THERE are three major situations before the Paper Industry today which will bear watching and to which much thoughtful consideration should profitably be given by all concerned.

We name them in order—not of their relative importance particularly, but in order to comment on each one briefly:

The curtailment of **Over-production.**
The prolonged lockout of the Swedish Pulp Industry.
The growth of the hand-to-mouth buying policy.

The curtailment of **Over-production** has now become a recognized necessity by every branch of the Industry; to such an extent that within recent months, announcements have gone forth from the great corporations operating in both the United States and Canada that no more new paper or pulp mill installations shall be projected.

This is merely delayed wisdom.

The Paper Industry in every section in America —North, South, East and West—has suffered pitiably from the needless competition brought about by uncontrolled and ignorant **Over-production.** Competition of the character witnessed in America during the past five years, between the producers of so essential a commodity as paper, may have meant life for the product, but death to the producers. It was simply inevitable that sooner or later, this senseless **Over-production** of paper and vicious competition must cease.

The prospects now seem to be that even though it be late in the game, a cessation of **Over-production** is the conviction of the hour.

Assuming that such be the case, a gradual betterment of market condition would naturally follow, providing all other factors remained in status quo. But other production factors are changing also—and of primary importance—

The prolonged lockout of the Swedish Industry.

The pulp mills in Sweden did not start operation after the Christmas holidays and locked out all of their employees.

This came as a final consummation of the disputes that had been waging between the Mill Owners and Labor Unions since 1921.

The Labor Unions of the Swedish mills emerged from the post-war inflation, having wrested from their employers, advances in wages, piece work schedules and bonuses of various sorts, which had been the basis of many sporadic strikes and disagreements throughout the succeeding years. Every effort made by the Mill Owners to effect a reduction in wages has met with defeat. On September 28th, 1927, the Mill Owners notified the Labor Unions of the final cancellation of the 1921 wage agreement upon its expiration on December 31st, 1927. This notice included the General Agreement of 1921, the Wage Agreement of 1923 and all subsequent alterations and changes.

The Swedish Government appointed a Mediation Committee which failed to bring the contending parties together. The lockout began on January 2nd, 1928.

On Monday, April 9th, cables came through

EDITORIAL

stating that the Swedish lockout had ended and the mills were going to start up again by the 15th instant, if possible. It was too early to get any of the details of the settlement; whether it is settled permanently, whether the mills yielded or whether the Labor Unions conceded their contention. If the mills conceded, it will increase the cost of their pulp to the consumers of the world.

However, it is unnecessary to know many of the details of the new agreement to forecast the effect of this prolonged lockout. No pulp will have been produced for over three and one-half months which means that 350,000 tons of chemical pulps and about 175,000 tons of mechanical pulp will not be available to the consumers of pulp in the world this year. This drastic reduction will effect a material stabilization of all pulp values and it is yet to be seen how much pulp the Swedish operators can deliver when open water shipments start the last week of this month. Already 85 per cent of the total production for 1928 of the Swedish chemical mills has been sold. The question of pulp prices is going to turn on whether or not the Swedish mills can deliver to their customers the pulp that they have sold. It is feared that some cancellations are in order between now and the first of July.

Now, the loss of this tremendous amount of pulp from the world's largest supplier is a factor of prime market importance, and the effect on the market is still to be determined.

The growth of the hand-to-mouth buying policy, which started in 1923, has grown to national widespread proportions. Every division of industry feels it and every special fashion or staple commodity is affected.

The final result has been to curtail stocks and inventories drastically—some authorities put the stock shrinkage at $2,000,000,000.

Whatever it is, it has produced a market condition which must be adjusted. No longer do consumers worry as to the source of their paper supplies. Why should they when vastly more paper is pressing on the market than can be consumed.

A two-fold protection was accomplished by resorting to hand-to-mouth buying—a protection against market decline by carrying minimum stock, and a protection against acquiring obsolete goods in this day of rapid changes in style and quality.

Now, from a market standpoint, these three major features are all working in their own natural way to make a more stable and profitable market condition. For to sum up in a few words, the situation is just this:

We are actively curtailing **Over-production** here in the United States.

Sweden, the greatest producer of chemical pulps has made a curtailment of approximately 30 per cent of the entire year's production in foreign pulps.

At the very moment that domestic and foreign curtailment is occurring, the stocks and inventories of paper in the hands of cosumers, retailers, wholesalers and converters is abnormally low, with little prospect of any let-up in the purchases due to the long habit of hand-to-mouth buying.

In other words, production of paper is static and curtailing, the buying of paper is static, and consumption is increasing.

Some day if these three major factors continue to operate as they have been in the past three months, a beneficial change is bound to accrue to the Paper Industry, provided, of course, that the ignorant producer becomes enlightened and does not throw a monkey wrench into the works.

Profitless Prosperity

THE editorial which appeared in the March issue of THE PAPER INDUSTRY under this subject, has brought forth many comments. Some of these have opened up avenues of thought and question which will be covered later in this series.

The previous article dealt largely with the method of refining paper stock and the general custom of permitting all kinds of dirt and rubbish to enter into paper mills. This reference, of course, applied largely to mills manufacturing coarse wrapping paper or boxboard. It is hoped the managements of some mills may be awakened to realize the enormous losses that are constantly taking place in their plants, which might easily be turned into profit.

Profits that are Washed Away

This article will treat another phase of the subject of waste, that which is carried away with the waste water at the mills. Some time ago, a man who contemplated the purchase of a boardmill was making a tour of inspection around the place accompanied by a friend. They became separated and the prospective buyer walked down to the river bank just below the point where the waste water from the mill entered the river. The color of the river bed attracted his attention, and upon investigation it was found that the bed of the river had a layer—it would be hard to tell how thick—of straw fiber. This condition existed for a long distance down the stream, and the amount of fiber which had been carried away could never be estimated. When he joined his friend later and was asked what he had seen, he replied, "If we could have the waste around this mill, the other fellow could own the property." This is but one illustration of conditions which exist at many plants.

At Last!!

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EDITORIAL

In a similar case, the waste from a mill in an eastern state was being run into a small pond. It is a well known fact around this mill that the pond is lined with fiber. A stone thrown into the water will sink very slowly on account of the water being so thick with fiber. No doubt, thousands of tons of good fiber which has gone through all the processes representing a great amount of labor and power, has gone out of this mill as waste.

A western mill manager is said to have offered the local government of a certain city a considerable sum to be used in building a garbage disposal plant, the idea being that the waste waters from the mills could go through this system, thereby avoiding pollution of a nearby stream which had been quite a problem. A man who was thoroughly conservant with this subject, visited the territory and expressed the opinion that about 10 per cent of all the fiber that went into these plants came out with the waste waters. This means that at least 60 tons per day of good fiber, which represented considerable labor and expense, was being washed away.

Is it any wonder that so much of our seeming prosperity is profitless; that pockets are often empty when they might be full? Everyone seems to be working for big volume, but volume with no profits in any business is proof that something is radically wrong.

A chemical pulp mill was recently forced to close. Analyzing the facts which might have contributed to the condition of this mill, it was found that a large amount of waste material flowed from this plant into the river back of the mill. A short distance below the mill was a bridge. The water beneath this bridge was very shallow and the waste fiber which came down the stream accumulated at this point so that it was plainly visible. This mill was owned by non-residents, and whenever they planned a visit to the plant, employees were sent to this shallow place in the river with a long hose to stir up the fiber that it might be washed away by the stream and not discovered by the owners. Had this loss been revealed to the owners, the waste might have been stopped, resulting in a considerable saving.

Such Waste Can Be Stopped

In response to the previous editorial on this subject, an inquiry was received asking just how these difficulties could be remedied. There are many machines on the market that will save most of the fiber that is escaping from the mills. Some machines which have been made for this purpose have not been wholly successful; therefore, many mill men are skeptical of all like inventions, but this is no excuse for allowing such waste to continue. The advertising pages of this publication contain descriptions of a number of exceptionally fine machines for this purpose. However, this is not written with the idea of boosting any type of machine, but in the interest of the manufacturers of pulp and paper, with an endeavor to point out to them the enormous wastes that are constantly eating into their profits; to enable them to do away with the "profitless prosperity" and to plan and put into practice methods that will insure them real prosperity with substantial profits.

Truth and Honesty in Business

THE PAPER INDUSTRY is a trade magazine that has always believed in the above maxim. It is devoted to the interest of the manufacturer of pulp and paper. The business paper publishers have their associations as well as the manufacturers of paper and machinery, and these have served to bring about great changes during the past few years, in that most of the trade magazines now published are of higher character.

The Associated Business Papers, Inc., is an organization of publishers working for higher ethics in business. THE PAPER INDUSTRY applied for membership in this organization and has been unanimously chosen by the Executive Committee as a member. This organization has certain standards of practice to which we surely agree, and we believe it will be interesting to our readers to know our aims, which can be told better in the ten A. B. P. principles, or standards of practice, to which the publisher of THE PAPER INDUSTRY has subscribed. These are as follows:

1—To consider first the interests of the subscriber.
2—To subscribe to and work for truth and honesty in all departments.
3—To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns and to make his criticisms constructive.
4—To refuse to publish "puffs," free reading notices or paid "write-ups"; to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?"
5—To decline any advertisement that has a tendency to mislead or that does not conform to business integrity.
6—To solicit subscriptions and advertising solely upon the merits of the publication.
7—To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements, subject to proper and authentic verification.
8—To co-operate with all organizations and individuals engaged in creative advertising work.
9—To avoid unfair competition.
10—To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

THE PAPER INDUSTRY is the only publication in this industry that is a member of the Associated Business Papers, Inc.

THE PAPER INDUSTRY

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Vol. 10 APRIL, 1928 No. 1

The Process of Sulphite Manufacture

Part I—The Woodroom

By FRED MOTSCHMAN

Member of T. A. P. P. I. and Sulphite Chemical Engineer

This article is the first of a series by Mr. Motschman which will appear from month to month in The Paper Industry, constituting what might be called a practical course on the sulphite process.

IN the sulphite woodroom it is not usual to find very many different species of wood. The Forest Products Laboratory has prepared pulps from nearly every common species of wood, and it is surprising how fairly suitable a great number of these woods are to pulping by the sulphite process.

The most common sulphite wood is spruce, and following it in order of their importance, we have the hemlock, fir, balsam and pine.

Spruce lends itself very nicely to the sulphite process; it has nearly as good a fiber length as pine and produces without much trouble a light colored unbleached pulp of good strength and low bleachability.

The pulp produced from hemlock wood is somewhat darker in the unbleached state, may require as much as 10 per cent more bleach and the strength will not be as good. Hemlock pulp is however a tough, free pulp and gives very good yields.

The firs and the balsam are found mostly being used in mixtures along with spruce. They produce, thus used, very good pulps and do not raise the bleach requirement.

In certain sections of the country, sulphite mills are trying to modify their process somewhat so as to work in considerable proportions of pine wood with either or both spruce and hemlock. The pulp produced from pine wood has a very good fiber, the bleachability will average at least 25 per cent, and the pulp yield will suffer somewhat from excessively high knotter losses. However, with the advent of the rod mill and the comparative lower cost of the wood, pine should not be regarded as entirely unsuited to the sulphite process.

Woodroom Operations

If a mill is situated so that most of its wood comes in by rail, the four foot or five foot length will be the most commonly handled. Some mills located on the logging streams will get their logs in some multiple of these lengths. In either case, for more convenient handling by the barkers, splitters and chippers, the wood is usually reduced to not over 30 inches in length. The gang saws used for the cutting up of the logs are known as slashers. Here the logs are drawn up a slightly inclined table at right angles to the cutting edges of circular saws set up on a common shaft at regular distances from each other.

The wood is carried to the slashers and from them to the cleaning department in trough conveyors through which the wood is drawn along by the upper length of an endless chain or cable. If a chain is used there are provided at intervals of from six to eight feet, "lug links" which are needed to prevent too much slippage of the wood especially on inclined conveyors. When a cable is used it is provided with "buttons" at regular intervals, both for the purpose of preventing wood slippage and also to provide for a means of drawing it over the drive sprocket. The chain really makes the better set up as the drive and idler sprockets can be smaller in diameter and therefore the whole conveyor trestle timbers need not be so high, as the return length of chain will be closer to the road length.

Cleaning the Wood

As the wood to the woodroom will vary in species, age, length of seasoning period, diameter, degree of roughness, and, as in some cases, even as to form—round, split or lumber, the equipment of the cleaning department will include several of the prevailing wood cleaning machines. Among these the most common are: the disc barking machine, the drum

barker or "tumbler," and the portable rosser or "fish pole barker." In addition to these mechanical devices, nearly every woodroom has to make provision for hand cleaning of the wood, either subsequent to the mechanical cleaning or else directly on certain grades of incoming wood such as the slabs or lumber.

The keynote of the type of barking best suited to any one type of wood is: **the more difficult it is to remove the bark, the more drastic must be the action of the barking device.** Another rule which will have to be regarded when deciding on the equipment best suited for the woodroom of any mill is briefly this: **Select that type of machine which, on your average run of wood, will remove the bark best from the greatest amount of wood in a unit time with the lowest loss of wood.**

Hand Peeling—Hand peeling prevails only as a distinct operation in localities where there is plenty of cheap labor to be had and where a good percentage of the wood to the pulp mill is in slab form—sawmill waste. Its advantages chiefly lie in the suitability of the method to a wood which may be from a third to one-half bark. There is also the point of piecework inspection which is to be desired when clean pulp is to be made. From the standpoint of capacity per man, the hand peeling stands at the bottom of the list. An experienced man will clean only from one to one and one-half cords per nine hour day.

Disc Barking—The disc barking machine is quite common and is of very simple construction. It consists of an outer shell which is of cast iron and completely covers the back side and edges of the revolving disc, and the lower half of the front side. It also forms the base which must be of very heavy construction and allow the machine to be securely fastened to the floor timbers in order to minimize shaking of the machine when in operation. The disc which is heavily built, is fitted with a shaft which extends through the rear wall of the shell and is usually equipped with pulleys for tight and loose drive. The barking knives are set in slots in the disc so that they will cut off the bark of a log held against the revolving disc. They are so set that their cutting edges lie nearly in the same plane as the face of the disc, but still protrude enough beyond the edge of the slot to remove a thin slice of the outer rim of the log, and still not remove too much of the wood under the bark. An outstanding disadvantage of this type of barker becomes apparent here; the log is held with its grain parallel to the face of the disc, and in order to bark the low places or indentations along the face of the log, that section of the face must be all planed down to the level of the lowest point in the hollow. This of course means wasted wood. From a production standpoint, the disc barker leads the hand peeling operation by a very good margin. Taking wood suited to each process, the average figures will show that **the disc barker production in one hour will equal the day's output from one hand peeler.**

Drum Barking—On river driven wood, the drum barker or "tumbler" leads all other types, both from the standpoint of **bark removal, and production without loss of wood.** Given average conditions, **the drum barker production in one hour will equal the day's output from one disc barker.**

In setting up for drum barking, if possible the setup should be made with at least a pair of tumblers so situated and having the conveyors so arranged that the units can be run either as two in series on hard barking wood—as for instance with winter conditions—or the two run in parallel arrangement on easy barking wood. In either case it should be possible, through return conveyors, to circulate those sticks which come out with bark still on them, back to the inlet end of the drum.

The drum barker is best suited to river driven wood because the bark on these logs has been partly soaked off, and the action of the river motion, especially over falls or rapids, is to tumble the wood and thus render it more readily cleaned.

"Fish Pole" Barking—There is on the market a type of barking machine known as a Portable Rosser or a "fish pole barker." This machine is designed to bark those sticks which, while perfectly sound, are undersized and round. The bark is removed by passing the stick lengthwise and twisting it at the same time, along a high speed planer head. The stick is held lightly against the cutting edge of the head, either by hand or by means of a counterweighted thrust foot, and the stick may be barked as rapidly as the operator can feed it past the head. This machine is very efficient, of light weight construction, and requires but very little floor space or head room. The power requirement is low. This machine is a valuable adjunct to the woodroom where any quantity of round poles accumulate from the regular run of wood.

Inspection

Regardless of which method or machine is used for barking the wood, it should be fully appreciated by every man involved, that the function of the woodroom is to remove that material which will not make the best and cleanest sulphite pulp. Every man in the woodroom should look upon himself as a wood inspector first, and then translate this into terms of how he can best do this in the performance of his regular assignment.

In the mind of the man in charge of the woodroom as well as in the minds of the operators, there must be a compromise between production efficiency and barker efficiency. That is, on certain grades of wood the production will have to suffer, in order to be barked thoroughly enough to put out clean, sound wood. Also, the man whose barker loss is very low, generally has a low production rate, but he is cost-

ing no more and very likely less than is the man whose production is high with a correspondingly high wood loss.

Chipping

When the logs have passed through the cleaning department and are accepted by the final inspectors, they are conveyed to the chippers. The conveyor chains carrying the logs to the barkers and from them along the room to the chippers, are of a special flat link and have no "lug links." They are called "slick chains" and are used at this point because if the wood to the barkers is coming heavier than they are taking it away, the chains need not be shut down but will slide under the wood and merely pile it up in the trough until the men get ahead of the incoming rate. As the troughs are usually wider at this point than they are in the yard, enough chains are run parallel to cover the bottom of the runway.

There should be set up one of the chippers at the end of the clean wood conveyor, so that the wood will fall off the end of the chains as they come over the drive drum of the conveyor, into the mouth of the chipper spout. By this arrangement, one man can do at least one-half as much more feeding to the chipper, and be less fatigued by his work, than he can when he has to lift the logs out of the trough and throw them into the spout of a chipper set up alongside of the conveyor.

The function of the chipper spout is to hold the log at a definite angle while it is being cut up into cross grain slices by the knives set in the chipper disc. These cuts would be made at right angles to the grain of the wood but for several reasons: (1) The extra power required and the shock to the throat plates (bottom side of the spout) in cutting off at one blow a disc of wood eight to ten inches in diameter and 7/8" to 1⅛" thick; (2) By having the logs held at an incline to the disc, we increase the rate of feeding the log past the knives of the disc, first by the end-thrust of the weight of the log downward against the knives, and second by the "draw" of the cuts of the individual knives as they cleave off the slices; (3) Also, of course, the point mentioned in the previous paragraph, the increased efficiency of chipper feeding aided by gravity.

The capacity of a chipper varies with the size of the disc, the r.p.m. of the disc, the length of chip which it is set to cut, etc. These are really mechanical considerations and can be found in the list of specifications given by the makers of the machine. The factor which must concern us as users and which must be emphasized to the operators is **not chipper capacity but chipper output.** The rate of feeding determines the output and not only the volume of output but also its **quality.**

The best chips are made when the logs to the chipper are good, large, sound logs which fill the available spout diameter, and very poor chips with many slivers, tails and splinters are bound to be made if the wood coming to the chippers contains various sizes and much wind shaken logs or lumber. Under this condition nothing can be worse than slow feeding. By keeping the spout wedged full, much of the shattering action of the knives can be avoided. The necessity of keeping the knives in good condition cannot be over emphasized, for dull knives not only slow down the "draw" of the chipper but also raise the power requirement and cause low quality chips with much "fines." When the chipper does not cut good clean chips, this puts an overload on the regrinders. It is better to shut down a chipper occasionally for a few minutes, and dress up the knife edges with a file than to run on dulling edges, making poor chips in the meantime, and then changing to a new set of knives.

The usual practice is to have a foot operated, stop and start button placed so that the operator at the last chipper can control the conveyor and so keep wood coming to his machine. **As a matter of safety,** it should be possible to stop the conveyor from any of the other chippers and also from some other point earlier on the chain in order to avoid serious accident through more prompt action.

There is on the market a patented device which works in with the chipper disc and which reduces the work of the chip screens very materially. It is known as a Chip Breaker and its function, as may be seen from the name, is to break up those "cards" of chips which are strips of chips having been split off from the slices made by the chipper knives and which would, in the absence of the breaker, be rejected by the bull screen and go to the regrinder. The breaker consists merely of a small steel disc, in which are set up pointed steel fingers, and which revolves at a high speed under the chipper hood and in the rear of the chipper disc at a point where it meets the stream of chips fairly as they come through from the knives.

Screening

The chips as they come from the chipper, even with the breaker attachment, always contain off size chips—some over size and some too small to be well suited to the cooking. In addition, there is also a small amount of sawdust or "fines." The digester house wants a certain length chip—it may be ¾" or it may be as large as 1⅛" long—but they have planned on a predetermined length, and it is up to the woodroom to deliver as high a per cent of the right size chips as they find is possible with the prevailing wood and equipment. In order to do this, the chips are screened over flat or round screen plates, the sawdust removed and only the accepted sizes are sent to the chip bins.

The older and more usual type of chip screen is the flat screen, but the revolving cylinder screen is coming into favor and possesses some advantages.

The flat screens consist of trays, inclined down

toward their discharge, and stacked two or three deep and having their bottoms lined with perforated metal. The top tray has the coarsest screen plate and its rejects go directly to the belt feeding the regrinder. The next tray may deliver its rejects to the same belt or its product may be the accepted chips. In the latter case, the bottom of this tray will be very fine screening (⅛" mesh) and the material through this screen is dropped onto the fuel belt. The screen trays are suspended separately and the shake, a down and back movement, is given through tie rods from the trays to eccentrics whose cams lift about four to six inches.

Due to the reciprocating action of these screens there are many moving parts, and the wear and strain on the whole mechanism is very severe. They are, however, fairly efficient and find many backers.

The round screen is very simple in construction and action; its life is longer than the flat type, and as a screen it is very efficient. The cylinder walls are of perforated metal, and the perforations are graded from small at the intake end, to the largest toward the discharge end. The rejects leave the cylinder at the lower open end to go to the regrinder. The chips are fed into the upper end and the cylinder is rotated about its long axis.

The movements regarding chip preparation and selection will very likely be along the lines of chipper improvement to the end of the complete elimination of the screens. On kraft pulp, where the matter of selection is not so highly stressed as is the case in the sulphite process, this is already being done.

The short slabs, the large splinters and oversize chips which are rejected by the chip screens must be reduced in size and sent back for screening to acceptable sizes. This is done in some type of jaw crusher or high speed rotary breaker. The chips from either type or not equal in quality to the chips from the knives of the chipper, as they are pretty much shattered, and contain many fine chips called "matches." If the rejects run very high, the usual plan is to have a separate screen for these, but it is possible to have a small stream of rejects conveyed back and reground in the chipper itself by dropping them into the spout along with the wood.

Chip Conveyor Systems

The final accepted chips must be run into storage bins above the digesters from which point they can be dropped into the digesters, as needed, by gravity. The woodroom flow sheet should be so planned that when the chips come from the screens, they can be dropped onto conveyor belts and go as directly as possible to the digester house chip storage. The proper planning of this flow will save money in motors, belts and conveyor houses. When run without cleats, to prevent back-sliding of the load, the conveyor belt cannot be made to carry its load up an incline much steeper than a 15 per cent grade. For this reason where the rise is too steep for an inclined conveyor belt, a regular conveyor belt is equipped with a double row of sheet iron scoops or buckets, and made to run as a vertical section between two inclined or horizontal sections. This plan becomes necessary when the "rise" is too high for the "run."

Considerable improvement has been effected in the use of an air blast for the conveyance of solids such as chips, so that now the pneumatic conveyor is looked upon with more favor as a convenient, cheap and efficient method of transferring the chips from the woodroom to the digester house. A substantial trestle is all the support that is needed for carrying the pipe and for its occasional inspection for leaks or repairs in time of a plug-up. This is to be contrasted with the heavy conveyor houses needed when belts are used. With the conveyor house is associated: (1) initial cost of erection; (2) insurance requirement of sprinkler system piping; (3) maintenance costs for the house itself, the belts and cradle rolls, which must be lubricated; (4) fire hazard; (5) constant service of one man on inspection and clean-up.

Uniformity

Probably, the point which deserves the most emphasis and attention of everyone concerned in the woodroom operations is the point of **uniformity.** There is no one quality more desirable in the operation and product of any department. Given uniform chips, the digester house already has a large lead on the way toward making a uniform pulp. Some superintendents will argue in favor of a ¾" chip, while others will argue just as long and loudly on the merits of cooking with a 1⅛" chip. Each claims better strength, better yield, better circulation— better everything, in fact. On the oher hand, what of the digesters turning out pulp of good yield and quality from straight sawdust? In the digester house, we try to give a definite period of saturation as the first stage of the cook. The length of this period is determined after consideration of a number of factors, chief among which is the **average chip size.** There are many other variables to be taken into consideration, but I do not believe that any superintendent will take exception to this as a summation of the proposition: **Uniform raw material plus uniform operation will give us a uniform product**—and this means **more sales!**

Clarence H. Howard, president Commonwealth Steel Company, has said that only a small percentage of accidents can be prevented by mechanical safeguards; the balance must come through the practical application of the Golden Rule, which is positive, constructive safety. Safety First, when properly analyzed, is the expression of fellowship. This positive viewpoint of safety is one of the most important factors in reducing accidents.

Foremanship Development

By JOHN O. EMERSON
Editor, National Foremanship Board
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This is the third article of a series which began with the February issue of THE PAPER INDUSTRY. *Succeeding subjects will be: The Key Position of Man Power; and Developing Mass Psychology in the Paper Mill.*

FOREMANSHIP Development is one of the great needs of industry today. When we start to analyze the "need" for something in industry, one of the safest measuring sticks we can use is the reported experience of concerns who have previously felt that they too "needed" the same something and put it to the test to find out if the need was a real need, judged by the results obtained and the cost of fulfilling the need. It is another case of "does the end justify the means?" Let us see if it does.

In a treatise on "Fundamentals in the Development of Industrial Foremen," compiled by Robert H. Spahr for the Department of Manufacture, Chamber of Commerce of the United States, we find these comments from leaders in different lines of industrial activity who have undertaken programs of Foremanship Development.

"Experience has proven beyond question the value of this training both to the men and the company."—Transportation.

"We feel that this training proved beneficial both in arousing interest on the part of the men and a discussion of their own problems and in knitting them more closely in the personnel of the company."—Paper.

"We found that the efficiency of our organization was almost immediately improved by undertaking the course. The big thing that appealed to us was the opportunity to put over ideas of loyalty, co-operation and harmony in our entire organization."—Lumber.

"We find the classes well attended and the foremen generally seem to look upon it as an honor to be invited to 'attend school.' Further we are confident that these classes have helped us gain inter-departmental co-operation and in that way has resulted in better production, both as to quality and quantity."—Fibre.

"While there is no tangible way of measuring results, we believe we have been more than repaid for the effort and expense."—Railway Equipment.

"We feel the direct result of all of our efforts with our foremen has produced a higher grade of factory executive and that it has prepared men to accept positions of greater responsibility."—Foundry.

"We are very well pleased with the outcome of this venture and have found it very instructive and broadening to executives as well as foremen."—Glass.

"Our foremen are very much interested, feel that they are being benefited, and we are satisfied that the training is adding greatly to the efficiency of these men."—Metal.

In addition, a sugar refining company has stated that a 40 per cent increase in output was the direct result of foreman training. In one of the large packing plants a foreman raised the output of his department from 400 units to 700 units as a result of applying the principles learned in his training class. A rolling mill reports a 34 per cent increase in production. A hardware manufacturing concern gives foremanship development credit for doubling its production efficiency in one year. Another company, engaged in shipbuilding, reported a 50 per cent reduction in labor turnover in six months due to foremanship training.

A few weeks ago, I personally put this question of the value of foremanship development work up to the superintendent of one of the large DuPont plants, Mr. H. C. Graebner. He replied substantially as follows: "The greatest good from my foremanship meetings—the general development and greater efficiency of the foremen—I can only estimate as worth thousands of dollars in present and future operations. I do, however, know this for a definite fact. A careful review of my foremanship meetings shows that they have averaged better than $500 per meeting in savings to the company through ideas brought out by the foreman at the meetings."

There is an abundance of still further proof that "the end justifies the means." The need of Foremanship Development in the paper industry is proved by what it has accomplished in specific industries where it has already been tried intelligently.

The trained foreman through his constant and continuous contact with workers naturally passes on to these workers the information, advice, instruction and understanding which he himself receives in his special development work. Developing good foremen means developing good workers; workers cannot be developed as successfully any other way as through contact with trained foremen. One of the country's leading industrial engineers has put it in these words: "If you want me to tell you whether your production organization is good or bad,

you need only to show me your foreman and I will be able to tell you."

Foremanship Development rights the errors of omission which modern management to a surprisingly large degree committed in the days when American industry grew from babyhood to gianthood. With this rapid growth it became necessary for management to concentrate its effort on the problems of selling, merchandising and distributing. The foreman became the stepchild of industry and he deserves a world of credit for doing as good a job as he did in this expansion period. When selling problems had been mastered, there came the realization that the quantity and quality of production must be bettered and costs lowered in order to be able to continue selling the product in competitive markets. The man most ideally situated to tackle this problem was the foreman. There was then a re-birth of appreciation for the importance of the foreman's job and competent management has now realized that the foreman can handle his enlarged responsibilities only in the degree that he is given adequate knowledge of what his new job is.

The Foreman's Job

The foreman of today has one of the most important jobs in industry. In a general way his job may be classified in two parts. The foreman, because he is a sub-executive and next in line to the working force, is:

1—The representative of the management to the workers.

2—The representative of the workers to the management.

In the first case, the foreman is the key man to carry out all the production policies, plans, etc., of the executive management, and in the second case, the foreman is the production advisor to the management, so far as the abilities, productivity, working conditions, etc., of his force are concerned.

The foreman's specific job is to get out the work. He is chiefly concerned with production, and many of the other things that he does, even though they seem as far removed from production as night is from day, are done, and must be done, **to help get out the work.**

An analysis of the foreman's specific job of getting out production shows that it may logically be divided into two parts. These are:

1—The **technical** part of the job.

2—The **non-technical** part of the job.

So far as the technical part of the job is concerned, the foreman is generally appointed to his position because he has the necessary technical qualifications required in the particular job which he is given. **This technical knowledge has been gained by the foreman in the school of experience by actually doing, himself, with his own hands and brains, the kind of work of which he is afterwards put in charge.**

It is taken for granted that the foreman knows one or more, or all, of such technical matters as tools, machines, equipment, material, costs, specifications, schedules, standards of quality, processes, record-keeping, methods, etc.

Beyond the above statement, there is no need for a further general analysis of the foreman's technical job, because the very fact that he has been made foreman is proof that he knows this phase of his work.

In the non-technical part of the foreman's job, an analysis shows a somewhat different story. In classifying this division of the foreman's duties, it is possible to name twelve special jobs which every foreman must do to "get out the work" better, or faster, or at smaller cost. The non-technical part of the foreman's job has been called the "human" side of the job. When a worker is made a foreman, it is understood that he knows how to do **his own job well.** After he becomes a foreman he is faced with the necessity of making **other people do their jobs well.** To do this he must be able to lead people, teach them, direct them, know and understand them, and become what one foreman has described as a "human engineer."

Various estimates by managers have been made to indicate the importance of the human side of the foreman's job. These estimates of the importance of human engineering run as high as 80 per cent of the job, and none fall below the rating of 50 per cent.

The twelve special divisions of the non-technical part of the foreman's work are as follows:

1—Handling Men.
2—Carrying Out Management's Policies.
3—Working with the Organization.
4—Making the Job Safe for Workers.
5—Maintaining and Improving Quality.
6—Breaking in the New Man.
7—Cutting Costs.
8—Putting New Ideas to Work.
9—Controlling and Reducing Labor Turnover.
10—Developing Foremanship Qualifications.
11—Knowing Business Facts of Industry.
12—Building Industrial Good-will.

Each of these twelve functions may be further subdivided into a hundred or more special and ditferent situations which come under each of these headings.

Handling Men

In the job of Handling Men, which is the first classification above, the foreman's job is to learn how to handle men with sincerity, understanding, justice, patience and strict honesty. **It is the human factor of ability or inability to handle men which often does as much as anything else to make or**

break a foreman. Good leadership is a far rarer quality than good workmanship, and to **handle** men you must be able to **lead** them. The foreman needs to develop a knowledge of ways to reach men, help men think straight, treat men as he himself would like to be treated, know how to praise as well as blame, and how to keep promises; know how to make use of non-financial incentives and how to apply the principle of the "square deal."

He needs to know that he cannot handle men well if he "hangs out" with them, takes sides or plays favorites, fails to know his men in a personal way or does not know how to **maintain discipline without losing his men's loyalty.**

Carrying Out Management's Policies

Carrying Out Management's Policies, No. 2 above, is part of the human side of the foreman's job because doing it properly requires the knowledge and ability to transmit and explain these policies to workers in a way that will get their interest, enthusiasm and support. The foreman is the only executive, generally, with whom the workers are intimately acquainted and he can, therefore, do more to influence them in accord with management's policies than anyone else in the organization.

This function of the foreman covers his duties in popularizing company plans and methods, representing the management to the men, following orders and instructions and company standard practices, backing company projects, boosting the company's cause and maintaining respect for company rules and regulations.

Every Company is known and judged by its foreman. A study of the ways and means of best representing management to men is well worth all the time a foreman can give to it.

Working with the Organization

Working with the Organization is the third special division of the foreman's main job of getting out the work. **Every organization depends for its life on the co-operation of its members—one man can do little by himself.** Workmen must co-operate to produce anything successfully. The foreman needs the co-operation of his men—the superintendent needs the close co-operation of the foreman. The better the team work, the better production and sales, and the larger and more secure are the profits.

In order to get men to work together, the foreman must bring into play a sound knowledge of the purpose of organization, his own relationship to those above him, beside him, and below him in the organization, the advantages of team work, and he must put into practical, daily use the proven truth that any organization, like a chain, is only as strong as its weakest link.

Making the Job Safe for Workers

The fourth function of foremanship is Making the Job Safe for Workers. With one in every ten men engaged in industrial work injured every year, according to the figures of the National Safety Council, the need for continuous, constant safety effort is ever present and the foreman must realize that **accident reduction is vital to consistent and economical production.**

Many foremen fail to give the importance of safety the place it deserves in their schedule of duties. Safety should be a part of his every-day work with each individual employe, each process, and each piece of equipment. **The records of accidents in industry show that 85 per cent of all injuries are due to causes which cannot be mechanically guarded against.** The cause of the big majority of accidents is carelessness, and the foreman's job is to teach safety to his men over and over again, be on the watch for places or conditions which might cause accidents, educate the worker in safe practices, enforce safety rules, reduce fatigue, and set a "100 per cent for Safety" example in his own actions.

Maintaining and Improving Quality

Every foreman is familiar with the need for Maintaining and Improving Quality, and a great deal of stress is today properly being laid on the importance of this special part of the foreman's job. Production without sticking to standards of quality is always costly and frequently results in putting a company out of business. This is waste which good work must pay for in some other way.

It is the foreman's job to keep the quality up and improve it whenever and wherever possible without increasing costs. He sees the materials. He supervises the men as they work. He knows the route of the work and the product through the organization. He is an inspector just as much as if he were in a special inspection department. It is part of the foreman's job to produce quantity with quality and without **sacrificing either.** He must create the right kind of human relationships with his force so that men will **want to help him** carry out every program that calls for getting out quality work and that they will realize that their own wages are dependent upon keeping quality up, because the result of poor quality is the failure of the business.

Breaking in the New Man

The need for the foreman to be a good teacher is brought up when the job of Breaking in the New Man is analyzed. In some few cases new men are trained by a special force and turned over to foremen afterward, but the majority of industrial concerns look to the foreman to teach the new man what he needs to know about his work. The necessity for understanding human nature is likewise most important here because it is not enough to simply teach a new man the **how** of his job. The new man needs to be made "at home" and to be put at ease. He should be told the **why** of his job, warned against any hazards likely to cause accidents, influenced to

think straight, and given every help to get him started producing as quickly as possible, and started at the beginning with the right point of view about quality work.

Cutting Costs

It is a generally accepted fact that much of the high cost of industry can be lowered, and Cutting Costs is a part of the foreman's job which is being studied continuously. **No company can hope to sell quantity or quality unless the price is right.** In the campaign to lower costs, foremen are proving of valuable help in a closer analysis of speedier handling, machine, power and labor costs, stoppage of unnecessary waste in materials and in time, and better planning so as to take the guess-work out of production.

Putting New Ideas to Work

Any business grows in proportion to the new ideas and improvements put into it to speed up or simplify production. Putting New Ideas to Work must always be considered as a part of the foreman's job because if he has the right kind of interest on the part of his men they will give him new suggestions which he may use, with some additional perfecting in some cases, and help the business in a number of ways. The foreman who knows the minds of his workers knows how to encourage them without showing favoritism, and **how to develop a spirit of improvement without nagging or driving.**

Controlling and Reducing Labor Turnover

Another expense which industry suffers to a degree which is not necessary is the expense caused by a high labor turnover from avoidable causes. Controlling and Reducing Labor Turnover is a big part of every foreman's job because he is in a key position to see and understand the causes and to correct them with a little study of the situation.

The foreman who has discovered the secret of good human engineering knows how to avoid the causes of high labor turnover, and to establish the working conditions and happy family atmosphere which make men want to stay on working for him in preference to going elsewhere for more money.

Developing Foremanship Qualifications

Developing Foremanship Qualifications is part of the foreman's non-technical job, because he must always be training another man to take his place if he expects to be promoted himself. A study of this function shows that foremen cannot often teach others to have the qualifications which make a good foreman without first having developed these good characteristics in themselves.

Knowing Business Facts of Industry

Every foreman's own department is, in a way, a "going" business. Knowing the Business Facts of Industry is today a part of the foreman's job, more so than ever before. The foreman's ability to answer the questions of his force and correct the wrong impressions that his men sometimes get about the company, capital, labor, the source of wages, money, the supply of labor, and other factors of production depends upon his knowing the basic facts of business and economics.

Building Industrial Good-Will

The last subdivision of the foreman's job is Building Industrial Good-will. The foreman can improve the human side of the job only by making use of the powerful help of good-will, among his workers, among his fellow-foremen and with the management. He needs to analyze how good-will can be created at these points of contact, how to keep it working and how to use it to help get out production.

The Foremanship Development plan of the National Foremanship Board, therefore, makes a study of every one of these functions of foremen. The ways and means that other foremen have used to solve many problems of production, and to get better work all around, are gone over in detail and reported under the special sub-division of the foreman's job where they apply. **A study of these experience records by the foreman assures him of finding out the proper method to follow in making the most of valuable human relationships on his own job, and helps him to handle the non-technical part of his job more efficiently and more satisfactorily to himself and to his company.**

"Foremanship Development" is the answer to the need for greater knowledge and understanding on the part of foremen, and, as we have seen above, it is paying its own way in bringing about better production and lowered cost of operation.

Modern Machinery and Its Relation to Quantity and Quality Production

By GEORGE RICE

THAT there is scarcely an operation in any of the manufacturing departments of a paper or pulp mill that cannot be done better and cheaper by machinery than by hand is well known to mill owners, superintendents, foremen and the general workers of the paper and pulp industry. But the fact that new and modern machinery invariably excels in quantity and quality production that of worn and antediluvian machinery apparently is not so well known to some mill officials, even though they be men of experience.

The writer has had an opportunity to travel among paper, pulp, textile and all kinds of mills in the United States and France during the past several years, and being a mill man, naturally made

observations. While with the army in France, instead of visiting the art galleries and places of amusements like most of the others when on furlough, I visited factories. There, as in the United States factories where I had worked, I observed that the most successful manufacturers were those who were equipped not only with machinery but with modern machinery. There as here I saw that some mill owners hesitated to invest money in new equipment even though they realized that the day was not far distant when they would wake up some morning and find their plant full of junk. In the good old days when profits were most always made regardless of quality and quantity production of the plant, the average paper mill like the average mill of any kind, contained a collection of co-acting mechanical and near-mechanical parts.

Cumbersome machines, slow machines, hand poling vats, and human energy wasting devices were common. Competition was not very strong and the stockholders usually received fair dividends.

It is different now. Paper and pulp mill machinery is designed and built on scientific principles to do special kinds of work in the most economical and efficient manner possible. It is the mill that is equipped with this kind of machinery that is successful today. It is the mill that is struggling along with worn or obsolete machinery that is not successful. The writer is not an exploiter of new machinery nor is he connected with any machine building or distributing firm, but simply an all around mill man who has had an opportunity to learn a few things about machinery efficiency in French mills while in the employ of the Government during the war, and in United States mills while traveling among them or working in them since then.

Mill machinery which has been operated so long that there are abnormal vibrations in the bearings, engines that knock so hard that the knocking can be heard outside the mill, belts that wabble, slip, creep and run off because of age and patching, are far from being assets to any manufacturing plant.

I was sent out to erect new machinery for a Massachusetts machinery company some years ago, and whenever my work happened to be in a new mill, I could see evidence of prosperity in every department.

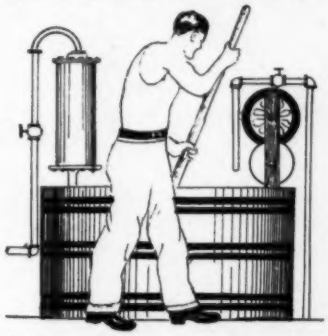
Usually, it was very different in a mill in which the machinery had been running twenty-five or thirty years and had become worn and obsolete. I met one man who said that he would not accept as a gift a mill equipped with machinery 30 years old unless he could scrap the equipment and replace it with new. His argument was that even if the old machinery had been kept up in running condition by constant replacement of worn parts, its obsolescence would make it practically impossible for him to compete with the mills with higher speeded, up-to-date machinery of the same make.

Machinery forty years old will run, and I have worked on some as old as that. It was well kept machinery, but its efficiency was low as compared with new machinery.

Some Put No Limit on Machinery Age

I have met mill managers, superintendents and foremen who for some unaccountable reason think there is almost no limit to the age of a machine if that machine is kept in perfect repair. They overlook the fact that a new model of machine will either produce better quality or reduce costs of production, and the machine builders are constantly producing new models that will accomplish both of these ends.

My experience has been that if a new model of any machine will produce better quality or reduce the cost of manufacture, the sooner the old machine is discarded as junk the better it will be for the success of the mill. A machine which has been well kept up over a long period of years may produce fairly perfect goods, but whether it can produce as efficiently and economically from the standpoint of quantity as a new model of the same machine, is a problem which advocaters of old machinery values seldom are able to prove to the satisfaction of men whose ideas differ.



Hand poling a vat is an evident waste of time and energy in these times of modern machinery efficiency

"I do not buy every new thing that comes along," said one mill manager who held his position because his father was a large stockholder in the company. "I do not buy indiscriminately; I prove everything."

His plant looked accordingly. Much of his machinery should have gone out of the window long ago. He had passed dividend after dividend payments because there was no surplus after paying running expenses. He was headed for the rocks and did not know it.

Loading Up vs. Careful Buying

Of course a mill official should not load up with every new invention that is presented. A very successful paper manufacturer told me that before buying new machinery he considered first, if he actually needed it; second, if he had the money to pay for it; and third, if he could be assured of getting the proper interest on the investment.

But, he added, "If I find that I really need a new machine, I go ahead and buy it and take a chance on being able to pay for it, and I give no further thought of the interest on the investment."

Some mill men will not install new machinery because of capital cost, although in these days of high

financing it is easy for an established manufacturing plant to be financed for almost any amount of new equipment.

Other men hesitate to make changes for the better because of the additional expense which might be involved in changing the mechanical and power systems of their plants. The new machinery may require a revamping of the line shafting, a larger water wheel, a more powerful engine or additional individual or group electrical motor drives, and the prospective costs and delays check their enthusiasm for new machinery. So they plod along as their grandfathers did and gradually see their business absorbed by competing mills which are controlled by live men.

Some object to the possible interruption of normal activities of their plant during machinery reorganization. I have seen the entire machinery of departments in mills replaced without material hindrance to production. New machines were substituted for old ones in rotation until all had been changed. It was like having a single machine of a group of twenty idle during the time, all the other nineteen operating constantly.

All manner of excuses are made to machinery salesmen by some mill owners, men who for various reasons hesitate to take action even when they know that their machinery is mechanically obsolete, or if not mechanically obsolete, uneconomical to operate. Still the mills controlled by these owners run on, and usually a reasonably good grade of pulp or paper is produced and sold for normal prices. However, the point we wish to make is that with better machinery, these same mills could produce a better quality of pulp or paper, and obtain better prices for it.

Lessons in Paper Making

Lesson XX—The Superstructure of Paper

By HARRY WILLIAMSON

Class Instructor, Champion Fibre Co., Canton, N. C.

This article is the twentieth of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general education course, conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

WE APPROACH this particular subject with some temerity. Given a specific set of conditions applicable in a particular mill, meet with the papermakers of that mill to discuss the subject of sizing paper, and the title "lesson" would be quite appropriate. Written in the form of an article, however, to be read by thousands of papermakers who are dealing with variable factors in relation to this sizing of paper, each factor having a direct bearing on the **result** obtainable, and the title "lesson" seems not only ambitious, it becomes presumptuous.

It is the experience of this writer, however, that in any given article on papermaking considered worthy of publication, while the method and ratio of application of the subject written about will not fit every local condition, if the reading of the article provides the necessary **incentive to think**, then perhaps the title "lesson" is still apropos.

Sizing and Its Functions

Sizing paper: To coat the fibers which form the structure of the paper with a sizing agent which will resist the absorption of liquid by the fibers. To add a "superstructure" to the foundation to achieve a definite object.

The house is painted to prevent the **penetration** of rain into the wood. If the office desk does not receive a sufficient coating of shellac, the moisture from the atmosphere will **penetrate** the wood, thereby raising the grain and giving a **roughened** surface.

The **degree** of sizing is given a numerical value by the number of seconds required for a liquid to **fully penetrate** the finished paper. In testing the paper, a standard liquid is used, thereby making the recorded results for different papers comparative.

The purpose for which the paper is desired, and the viscosity and manner by which the ultimate liquid is to be applied to the paper while fulfilling its purpose, is the reason for the various degrees of sizing. For instance, we have "butchers blood proof" and "drinking cup." Both these papers are destined to be in contact for an appreciable time with a **fluid** liquid. If such papers should show a spreading or feathering, caused by the absorption of the liquid by individual fibers raised from the surface of the sheet, it is of secondary importance.

The principal feature required of the sizing in such papers is to resist the penetration of the liquid **through the thickness of the paper** for the longest possible time.

An example of another kind is writing paper. This paper is subject to the application of a fluid ink by means of a pen point traveling over its surface. The volume of the ink applied is low, therefore, the

resistance to penetration **through** the sheet need not be excessively high. In these papers, **through** the sheet is the only **direction of penetration permissible.** There must be **no** spreading or feathering on the surface of the sheet.

Newsprint papers are only subject to the application by impress of a heavy viscid printing ink, therefore, they need not be hard sized. There is very little volume of liquid to be absorbed and the viscosity of the ink is of itself a preventive of surface spreading.

The ultimate purpose of blotting paper is to **absorb liquid,** and the quicker, the better; therefore, such papers contain no sizing agents.

The Precipitation Process

We have described the sizing of paper—"to **coat** the **fibers** which form the structure of the sheet, etc." This description implies a precipitation of the sizing agent over **every surface of each fiber.** Should such a precipitation be achieved and actually **retained** during the following processes which form the sheet into a continuous web, and the sizing agent used be of a quality sufficiently resistant to liquid for our purpose, then we would have reached the millennium of sizing.

The precipitation of size on fibers, however, is a very sensitive process. There are factors which militate against the full, even precipitation in the first place, and there are other factors which have to be constantly nursed during the forming of the fibers into a continuous web, or the **retention** of the precipitated size is materially lessened and the sizing qualities of the paper suffers.

Surface Sizing

Because of these difficulties, some of the higher quality papers are sized **after** the web is formed. Even with these **surface** methods of sizing, it is interesting to note how effort is being made to apply the size at a point where the paper is still wet so that size can be pressed as nearly as possible into the structure of the paper.

The original method of surface sizing, and the one still most in vogue, is to apply an animal size to the sheet near the dry end of the machine. The drier and cooler the paper when entering the size tub, the better the sizing. As the paper is fully shrunk and hot when it enters the sizing tub, the application of the colder size causes the sheet to expand; particularly is this true of the lighter weights.

A later method of surface sizing is the Wheelwright method. This is effected at the wet end of the machine after the paper has passed through two wet presses, and before the sheet enters the dryers. Not only is this method an attempt to more nearly coat the **fibers** by pressing the size into the still wet sheet, it also permits the fusion of the size by the temperature of the dryers at the **same time the shrinkage of the sheet occurs.**

The effect of dryer temperature on sizing is a much discussed question in papermaking. This writer is of opinion that shrinkage and fusion should take place **in the same ratio.**

Considering the surface method of sizing, if the sheet is fully shrunk when the size is applied, the subsequent expansion may very possibly be uneven, thereby causing cockling. In the other surface method, if the sheet be highly hydrated and the temperature of the dryers at the wet end is too high, the shrinkage takes place more rapidly than the fusion of the sizing agent. As a consequence, the fusion of the size does not permeate the thickness of the sheet evenly. A gradually increasing temperature, a fusion of the size with the still moist sheet, the cohesion of the hydrate pulling the fusing size into the compacting sheet, the whole culminating at a peak which will still allow the sheet to cool a little before entering the calenders, these seem to be the ideal factors to aim at as far as dryer temperature is concerned.

Sizing in the Beater

The method of sizing most common in papermaking is to mix the size with the stock in the beater, afterwards adding the precipitating agent, alum. This would seem to be the ideal opportunity to **coat** the **fibers** with size. However, we must remember that the perfectly sized sheet does not only require precipitation, it also includes retention and subsequent fusion. In fact, these three words could form an adequate slogan for the papermaker in relation to sizing, **precipitation, retention, fusion.** The first two factors of this slogan interlock. Perhaps, if we recapitulate the function of beating—for it is in beating that the precipitation takes place, we will better understand the **sensitiveness** of the sizing operation.

The primary function of the beater is to **separate, soften and hydrate** the fibers. The secondary function is to **mix** filler, the size elements, and dyestuffs with the fiber. It is also generally accepted that the last two named are set on the fibers during the beating operation. In the case of the sizing element, the setting is almost entirely dependent on the development of hydration. Unfortunately, this development can be materially retarded by the same agent used to precipitate the size, **alum.** Herein we see the necessity for care in the question of **when** each element must be added to the beater.

The size is a combination of resin and soda ash, usually containing a percentage of both elements still uncombined. When alum is brought in contact with this combination, a **chemical** action takes place. The resin is precipitated from combination and resinate of alumina is formed. The adherence, cohesion of the free resin and resinate of alumina **to the fibers is a purely mechanical action.**

If the size is to be precipitated to form a **coat**

over every surface of each fiber, it is necessary to have the size well and truly **mixed** with the stock **before** the precipitating agent, the alum, is added. Usually, the size is added to the beater early in the charging, while the charge is still light, thus assuring a thorough mix.

Resin size has a low surface tension and quickly penetrates the pulp mass. Experts disagree as to whether the free resin or the resinate of alumina is the most valuable sizing agent. In support of the former theory, the fact is brought out that resin can be precipitated by the use of sulphuric acid. Such a practice, however, would be hard on beater fillings, pipe lines, etc. Again, papermakers object to the presence of free sulphuric acid in the alum they buy. On the other hand, while excess alum will harden the sheet, it does not increase the sizing qualities. A sheet hardened in this manner will feel well sized, but actually it will still be absorbent. It is a moot point, and one for the research laboratory to decide. Possibly, a precipitated size with a higher proportion of resinate of alumina will not be so well diffused and be more liable to create resin spots.

Leaving out the question of the effect of resin size and alum in dyestuff, after the size has been fully mixed with the light charge, the beater is fully charged to the desired consistency and the beating continued.

Effect of Alum on Hydration

If the alum is added too early or in excess, the development of hydration will be materially retarded. From our studies in the structural formation of paper, we have seen how necessary is the adequate control of hydration to produce the various qualities desired in the finished sheet. At this point it is well to remember that the cohesion of the precipitated size with the fibers is **mechanical.** There is no chemical action to **fasten** the size **on** the fibers. There is, however, an important **physical** action which has a direct bearing on the **retention** of the size after the precipitation has been effected.

As we know, the surface tension of water plays quite an important part in papermaking, particularly in fourdrinier operation. To develop hydration of fiber is to increase the surface tension of the water as a component part of the fiber. In addition, the filtration of free water through the felted mat of hydrated fiber is retarded by this increased surface tension.

As we have stated, the surface tension of the unprecipitated size is low. The precipitate resinate of alumina, the result of chemical action of the alum and size **has a high surface tension;** in other words, it will hold water tightly to itself. The unprecipitated size will easily penetrate the pulp mass and work into the pores of the fibers. Delaying the addition of alum will permit the development of hydration in the fibers. The result of precipitation will give us resinate of alumina **in** and **on** the fibers **with its capacity to tenaciously hold water.**

Granted such a combination, we need not fear the violence of the pump action, nor the violence of the delivery of the mixed volume to the wire. Neither of these will be able to wash the precipitated size from the fibers. The filtration of the water through the wire will be slow, and the subsequent suction, though high, **will not be able to pull the size from the wire side of the sheet.**

There is, however, one condition which can spoil this ideal combination—**Heat.** High temperature during beating will prevent the development of hydration. Heat in the form of steam used in the white water will effectively reduce the surface tension of liquids. It will free the stock. This factor is perhaps more provocative of debate on the causes of slack sizing than any other, particularly where an enclosed white water system is used.

Sometimes when the sun is shining brightly and the sheet becomes slack sized, we too readily assume the stock is too hot, and promptly turn fresh water into the system to be fed on to the machine. We are apt to forget the ratio of alum added to the beater has been calculated with a view to the amount contained in the white water. As a consequence, the sizing gets no better. The surface tension of the water has been increased again, but there is not enough alum to properly precipitate the size.

Sometimes we say a sheet is "slack sized" because it shows feathering under the ink test. A check by the penetration test should be applied in this case. If the penetration test is O. K., the feathering is probably caused by inadequate pressing of the sheet on the wire side.

The question of hard water, the presence of calcium carbonates, improperly washed stock, etc., has been purposely left out of this article. Such purely technical questions are quite properly dealt with by the men most concerned, mill chemists and the research department. Each factor has a bearing on either one and sometimes all three of the main factors in this perennial question of sizing paper: **precipitation, retention and fusion.**

Rosin Troubles in Papermaking

Liners for container board are frequently dyed with chrysoidine or mixtures containing it. This yellow dye is inexpensive but may change color if it comes in contact with the silicate of soda used as an adhesive in making the board. If the silicate is applied all over the liner, the change will be uniform and will not be objectionable. In corrugated board the silicate is applied in lines which may cause streaks in which the color has changed. Ekholm reports in Dyestuffs that these streaks may be avoided by longer beating and by the addition of more alum in sizing.

Current Thought by William Sibley

New Ideas

LESS than 100 years ago the school board of Lancaster, Ohio, indignantly refused the use of their school house for a meeting to discuss whether railroads were practical; stating as a basis for their refusal, that "such things as railroads are impossibilities and rank infidelities."

Back in 1834 when the steam locomotive was in its embryonic stage, there existed the prevalent notion among locomotive builders and railroad men that locomotives could not run uphill. Whenever a train came to a hill, the locomotive was unhooked, the cars pulled up by a winch, and a new locomotive attached at the top of the incline. While this seems ridiculous now, no one seemed to think it strange at that time. One day a Mr. Morris, a rival of the original Baldwin, decided to actually try running a steam locomotive uphill, and to his immense surprise, it got along quite well. When he told of this fact, nobody would believe it. Even when the editor of the Railway Journal recounted his wonderful experience of having been pulled uphill, an indignant subscriber wrote in that the editor had joined the ranks of liars—that the thing couldn't be done—that it was in violation of the law of gravity—then proceeded conclusively to prove by algebra that such a thing was impossible.

When the first steam boat plowed its sluggish way up the Hudson River, Fulton was regarded as a modern incarnation of Lucifer. When it was known that the fire was used to heat the water and thereby generate steam, worthy ecclesiastes debated the question publicly as to whether man had the right to make fire and water work together when God had definitely put them asunder. Man, they said, had no right to unite what the Supreme Architect had disunited. Even to the day of Edison—when he assumed the responsibility for the completion of the first central station in New York City, the project was denounced as impractical throughout the scientific world.

We don't have to go back so far, however, to find examples of astonishing opposition to newly developed devices. It took ten years to convince business men of the economy of the typewriter after that machine had reached mechanical practicability. It took nearly 50 years plus our Civil War to persuade people to eat canned foods. The vacuum bottle, invented by an English scientist as a means to convey serum from his laboratory to the royal palace when Queen Victoria lay dying, did not find its way into universal use until years had passed.

Such instances and ones even more illustrative of the reluctance with which human mind was wont to accept anything that might disrupt the even tenor of established ways, could be recited to a point of ad nauseam. Why it seems only a few years ago that neither the railway brotherhoods nor the managements would condone the discard of the old link and pin, with the result that it took an act of Congress to bring about the adoption of the automatic coupler. But it's different today. We have progressed far along the path leading toward mental and physical acceptance of new ideas and devices.

Perhaps in no better way can our mental progress be proved than by the mere fact that the great majority of American manufacturers and business men take a keen delight in being spoken of as pioneers in their particular line of work. We have come to the point where we know progressivism to be far more valuable than conservatism. Nothing is so desirable as to be considered progressive. And it is fitting that this be so, for otherwise our industries would not have attained the heights they now hold.

However, the mere fact that it has taken so long to attain our present industrial imminence, augurs well for the future if only because of the lessons our hesitance has taught. Knowing the fallacy of discounting new ideas and the costliness of refusing the adoption of improved devices, we are no longer content to continue in beaten paths but, each and all, are striving to improve existing conditions and present positions that we may reach still higher and greater achievements. The most clearly defined characteristic of the present era is the refusal of people to be content with things as they are. Additionally, with our complete recognition of the instability of present day methods, machinery and schemes, there are few indeed who will not

freely predict better methods for the succeeding generation.

The coming generation will see many articles of manufacture produced by different methods than the present. They will see the farmer with more modern farming implements. The manufacturer with more modern methods for producing his products. The housewife will have modern appliances to make the art of housekeeping easier and simpler and less a drudgery. The methods of doing most of the things today are so vastly different from the ways of our grandparents, that we often wonder they were able to carry on and accomplish as much as they did.

Current Improvements

Already our own product is being applied to uses that a few years ago would have been considered impossible. Paper is now being employed in the manufacture of such products as coffins, carpets, barrels and pipes. Over in the Orient they have successfully converted ordinary paper-pulp into a tissue that is stronger, more durable, and quite as attractive, as silk. Of comparative recent date, the U. S. Bureau of Standards instituted a study of methods leading to the increase of life of paper currency. This research, like so many such studies, has accomplished far more than merely adding 40 per cent to the durability. Among the changes suggested by the Bureau are the use of cheaper cotton fiber to replace linen fiber, and the substitution of caustic for lime in cooking the papermaking rags.

Unfortunately there are some business men who feel that if their grandparents and parents were able to exist and thrive under old conditions, they can do likewise.

Not only is this true of "some business men" but of "some paper manufacturers." As hurtful as the truth may be, there is little to be gained by refusing to recognize the fact that some members of our industry have been more laggard in the alteration of policies and methods than the slowest members of other industries. There is, of course, a reason for this. The paper industry has not been confronted with the same rapid obsolescence of machines and methods that other industries have had to endure. Industries such as the automotive, transportation, public utility, sugar, printing, or leather have faced problems and rapid changes that were of far greater magnitude and import than ever confronted the paper industry. This comparative freedom from upsetting tendencies has left many paper manufacturers with a hesitance to accept new ideas that was outgrown by members of extraneous industries years ago.

The time is coming when all this must be changed. Nor is that time far advanced. Changes are being effected today that tomorrow will render obsolete our time honored methods and machinery. And the firms who recognize this truth—keep alive to every change—remain ready to adopt all those changes that are worthy and justified—then alter their administrative policies to fit—will be in a position to merge with other firms,—as the dominant party to the transaction. Inversely, the firms who sit tight in their show-me-Missouri position and adhere to obsolete methods in spite of outside pressure, will be the ones who will find it impossible to successfully cope with the more progressive competitor.

Just a few of the countless things that are happening in the fields of science and engineering:

Several years ago, many of the leather industry scoffed at the possibility of tanning and using the skin of sharks and other deep sea undesirables for leather. Today, marine leather is being produced in large quantities. It not only tans to a beautiful hue but in comparison with animal leather is practically indestructible. The pelt from a shark is about two-thirds the size of that of a full grown steer—and it was raised without expense so far as pasturage or superintendence is concerned. From the by-products of marine leather are produced walking sticks, oil, glue, insulin, and various kinds of novelties.

Heavy metals are giving way to other types that in addition to being lighter in weight are stronger and more lasting. Not long hence we will have 100-horsepower motors that a man can carry on his shoulder. Adding machines and typwriters will weigh only one-tenth their present poundage and rolling stock for railways will be light enough to justify a decrease in freight rates. All this has come about through the study of atomic construction and molecular arrangement.

A few years ago, only a very few articles were manufactured from the mineral we know as asbestos. Today, this strange rock is being used in the manufacture of phonograph records, switchboards, tapestries, rugs, ladders, brake linings, pipe coverings, mailbags, and many other articles.

Invention and development is the order of the day. More than 40,000 patents are granted by our Government every month, and it is becoming absolutely imperative from the standpoint of commercial existence that we keep abreast of these things, among which are developments of deep going importance.

Of course, some of the so-thought, far-reaching developments of today will never gain universal adoption. Indeed, it is well that some of the notions of would-be inventors and originators do not go over with a bang because a lot of contraptions that are supposed to work wonders never get beyond the idea stage. Now and then an utterly unsound device does "get by" temporarily with the result that the number of good, honest people who were led to believe that their certain device was a wonderful

achievement will later discover themselves buncoed.

These false alarms and poor starts should not blind us, however, to the fact that among the countless improvements now being developed (many of which are arising from outside sources) there are a large number that likely will prove little short of revolutionary. It is for us to keep alive to all, sift the wheat from the chaff—then plant the wheat.

Plans and Policies That Cut Truck Overhead

By ERNEST A. SAUNDERS

TO OBSERVERS and students of business conditions, one of the important key points of the paper manufacturing industry at the present time seems to be that subject of Overhead.

The year 1927 has been said to be most conspicuous for its highly-competitive qualities. Business prophets and forecasters are saying that 1928 while perhaps a better year for business, will be even more competitive than 1927. The paper manufacturer, therefore, with the lowest proportion of overhead all through his business is in a better position now than ever before to survive and succeed through any amount or kind of competition they may surround him.

In his use of motor truck equipment, any paper mill executive knows that he has a most flexible overhead cost and one that usually permits of obtaining a lower overhead figure through careful study of the plans and policies under which his trucks are operated.

It is a time for clear thinking and for strenuous effort to reduce all possible waste in truck use. The opportunities are actually unlimited. It has been proven a great many times that a truck delivery system which might at first glance seem to be operating with greatest efficiency can be made to accomplish more work at less cost after a study has been made to eliminate wasted carrying capacity and duplicated service.

These, after all, are the two principal ways in which truck overhead can be reduced,—by eliminating wasted carrying capacity and by avoiding duplicated service.

Points That Control Expense

It is important, in beginning any review of a truck system with an eye to reducing costs, to obtain a bird's-eye picture of the factors that influence delivery costs in the paper business.

It may be said that there are five major points that control a paper manufacturer's motor truck expense. They are:

(1) Cost Knowledge; (2) Truck Selection; (3) Proper Routing; (4) Driver Policies; (5) Correct Maintenance.

In these articles it is the writer's intention to discuss the methods of economy which are open through these five channels. We will see how plans and policies may be adopted in each of these phases which will have a very material effect upon costs. Now we are interested in their general effect upon overhead. We are interested to see what viewpoint on these five points is necessary when we go about our effort to reduce truck delivery overhead expense.

The following statement represents much boiled-down experience in the light of suggestions on how these five points of a truck system should be reviewed. It is a concise summary of the important channels that offer lower costs. Every paper mill executive would do well to clip it and keep it before him as he undertakes to get the right perspective on his truck department:

The 5 Points to Truck Cost

(1) **Cost Knowledge.** By knowing our costs we establish an incentive or method for keeping costs down. Cost knowledge when accurate, serves as a budget to be watched and compared from one period to another. Costs, when split up into proper parts reveal waste and suggest ways for reducing items in which waste occurs. Cost knowledge enables valuable comparisons to be made between different vehicles, tires, drivers, routing methods and operating policies.

(2) **Truck Selection.** Each vehicle must be exactly suited to the special work it performs. A truck must be neither too big nor too small. Using a truck too big results in wasted carrying capacity. Using several small trucks on work that can be performed by one large truck involves duplicated service which is the curse of truck overhead. Be sure you are using the proper type of vehicle to handle each class of work with reference to short hauls, long hauls, big loads, small loads and the special needs of body types that will serve most economically.

(3) **Proper Routing.** More waste occurs through delay in poor routing than any other phase of truck use. Good routing invariably reduces the number of vehicles required to perform a given amount of work. Trucks, to be efficient, must be kept forever busy. A bunching of small deliveries means a full and

profitable load. Good judgment here will save many a dollar.

(4) **Driver Policies.** Waste elimination in day-to-day operation is largely in the hands of drivers. The attitude of drivers towards their jobs if loyal or indifferent will make or break a delivery system. Where drivers can be depended upon to co-operate, they can be pushed to greater effort by incentives such as bonus or contest plans. Where drivers cannot be depended upon, the performance recording devices are the most satisfactory answer to the problem.

(5) **Correct Maintenance.** Every truck department needs some system of maintenance to insure the lowest possible figure of running expense and repairs. A stitch in time saves nine. The concern whose trucks wear out prematurely and whose repair expenses are high are invariably those who have no regular plan of inspection, lubrication and adjustment. The life of any vehicle can be multiplied indefinitely by good maintenance.

Boiling the subject down still further, it is safe to venture the statement that the first step in efficient truck operation is to **use the right vehicles, keep them always on the job and forever watch your costs.** First make sure your truck service is on a firm and fair footing. Be sure you have selected the proper type of vehicle to handle each class of work. Then plan each day's work to eliminate as much waste time as possible including consideration of scheduling and routing methods, loading and unloading practice, peak and dull seasons, etc. Then keep close track of costs as a check on drivers, repairs, upkeep expense and as a means for constantly improving the methods of operation. Watching costs is important, for therein lies the knowledge we obtain on which we build by comparison for greater economy.

The Smaller Truck User's Problem

With the smaller companies, or those whose delivery requirements are adequately met by two or three trucks, the problem is not so intense. Yet the opportunities are the same and the same principles of working for greater value and usefulness of truck equipment apply. The small operator knows that it is not profitable for him to employ a delivery superintendent, a garage manager or perhaps even a mechanic. His business does not warrant this, nor does it warrant a major share of his own time. Other things require his attention from day to day and he is well satisfied to let his delivery service run itself as best it can.

therein lies what has been found in a great deal of actual experience to be one of the big leaks in the operation of a small fleet of trucks. The user of a small number of trucks, with what seems to be necessary haphazard truck operation to meet delivery needs, is placed at a disadvantage in comparison with the concern which can well afford to study and supervise its delivery work.

Yet in spite of all this, I have seen small fleets of trucks and I have seen two or three trucks the use of which has been so well organized that they are able to deliver at a unit cost every bit as economical as the concern with fifty or sixty vehicles. It has been demonstrated to me time and time again that the small concern need not accept as fate the presumption that it cannot compete with the big firm on even terms as to deliveries.

The secret lies in drawing a leaf from the experiences of the big truck users and in making, at the outset, enough of a study of how the big users get their economies so that from even the most general standpoint, the use of the trucks is placed on a sound and sensible footing.

It is in this way that the smaller fleet operators can obtain the most of value from the suggestions which are given in these articles. All the major points of truck operation, all the plans and policies that will reduce costs are distinctly applicable as to principle to any size of business. From any suggestions given, the small mills or the big mills or those in between can accept certain practices as foundations on which to build. Each concern can decide easily enough how elaborately the building on the ground work must be made.

Truck Plans That Help

Take, for instance, the matter of route planning. An observation of some of the most conspicuously successful businesses shows route systems worked out to a fine point, watched closely day after day, improved upon whenever the opportunity is offered and so arranged to cover the widest possible territory most profitably and with a minimum of waste.

By what methods are these routes planned so successfully? How are they kept up-to-the-minute? How should a paper manufacturer proceed to improve upon his own routing system? These are questions which are taking on increasing importance.

The experience of those who are operating successful route systems, shows that the first essential is the use of the proper vehicles to serve each particular route. Knowing the advantages offered by certain types of equipment for certain purposes, routes should be planned so that each customer is served by the type of vehicle best adapted to reach that location in conjunction with other locations most economically. Here a consideration of the electric and the horse-drawn vehicle enters in as well as the different types of gasoline trucks, and it may be said that all three types have advantages in handling routes under various conditions of volume of business, loads, roads and character of territory covered.

By "routing" is meant the arranging of definite

routes upon which the trucks are to travel. It requires the division of delivery territory and delivery work into sections which will lend themselves to concentrated operation of the vehicles. It is by no means an easy matter to plan such a system, inasmuch as careful study and observation over a considerable period of time is required. Routing a fleet of vehicles has been compared with laying a railroad track. The concern must, so to speak, lay down tracks over which its business is to travel and which in time will become fixed and will determine to a large extent the amount of profit the transportation system will return. Some executive must study such considerations as distances, density of traffic, mechanical obstructions, costs per mile or unit mile, possible expansion or contraction, schedules, and similar other factors.

Scheduling and Dispatching

The larger concerns and those that maintain a large fleet of delivery equipment will require a comprehensive system of scheduling and routing. In this case, the services of a trained delivery superintendent, whose sole duty is to see that every bit of waste is eliminated, will be more than justified by greater productivity on the part of the fleet. Ordinarily, the superintendent is located at the main office of the company and is in direct contact with the vehicles and drivers throughout the day. The methods by which he co-ordinates with the rest of the route system is a matter for individual consideration.

Scheduling is a clerical matter, pure and simple, but one which requires intelligent application and brainwork of the highest order. Briefly it may be said to consist of keeping every vehicle on the road all the time possible. In the broadest sense, the man who is responsible for scheduling has a bird's-eye view on the whole delivery situation. The method by which he ordinarily functions in connection with a truck fleet may be summed up as follows:

1—He is responsible for keeping up and interpreting the schedule system.

2—He must continually be devising new and better routing methods by time study and constant reference to the city map.

3—He must be ready to supply equipment where needed at anytime within reason.

4—He compiles each day's schedule and gives assignments to the drivers.

He is responsible for the frictionless co-ordination of branch fleets, eliminates unnecessary duplication and reduces idle vehicle time.

Distances That Pay

Another delivery problem of serious importance is that of determining how wide an area of delivery can be profitably and satisfactorily handled. In many cases, the enlargement of the delivery radius has gradually extended until the point has been reached where it is a question as to whether the cost involved in such deliveries is big enough to offset the profit or whether such deliveries can be made more economically by freight.

Invariably, the individual paper mill will begin first by handling nearby routes, keeping them, of course, compact and well covered. Then, these home routes will be enlarged to reach beyond the nearby trade, taking in direct hauls to the slightly-distant customers then perhaps the more distant customer well away from the city or even in the next city. Eventually the point is reached where the concern finds that a long distance delivery system has been established, usually without having made a close enough study of the problem on a cost basis to determine whether such business can be conducted on a profitable basis.

This problem is one largely demanding individual advisement. It is principally a matter of involving the economic law of diminishing returns, there being a point of distance beyond which the cost of cultivation and service overbalances the profit that results. What, then, are the considerations that must be applied to determine this point of diminishing return?

Any paper mill executive who considers entering a market that calls for longer deliveries should ask himself two questions: First, "can this market be covered, even partially, by utilizing delivery equipment time that is wasted under our present radius?" and, second, "how can our delivery facilities be adapted to better meet the requirements of long distance so as to lower the unit delivery cost on such work?"

Very often, by applying more particular care to the routing of the delivery fleet, it is possible to accommodate customers who seem under present conditions to be inaccessible. This has been known to have been accomplished in many cases even without additional equipment, or without sacrificing the service on established routes, so important is the matter of proper truck routing. This largely depends, however, upon the measure of efficiency that is being applied under the present routing system and in most cases, it will mean making at least a slight addition to the equipment employed, if any appreciable amount of such business is to be handled.

Righto

I'd like to be a could-be
If I could not be an are.
For a could-be is a may-be
With a chance of touching par.
I'd rather be a has been
Than a might-have-been by far,
For a might-have-been has never been,
But a has-been was an are.

—Making Paper

The Paper Industry 1928 Safety Contest

February Scores

23 Mills "Make the Grade"

PERFECT SCORES

	PARTICIPANT	MILL	LOCATION
Group A	Kimberly-Clark Co.	Badger-Globe	Neenah, Wis.
Group B	American Writing Paper Co.	Riverside	Holyoke, Mass.
	Finch, Pruyn & Co., Inc.	Glens Falls	New York
	Hollingsworth & Vose Co.	West Groton	Massachusetts
	International Paper Co.	Piercefield	New York
	Strathmore Paper Co.	Woronoco No. 2	Massachusetts
Group C	American Writing Paper Co.	Linden Division	Holyoke, Mass.
	American Writing Paper Co.	Albion Division	Holyoke, Mass.
	American Writing Paper Co.	Dickinson Division	Holyoke, Mass.
	American Writing Paper Co.	Wauregan Division	Holyoke, Mass.
	Beveridge Paper Co.	Indianapolis	Indiana
	Defiance Paper Co.	Mill No. 2	Niagara Falls, N. Y.
	Gardner & Harvey Co.	Mill No. 3	Middletown, Ohio
	International Paper Co.	Riley	Maine
	Kimberly-Clark Co.	Atlas	Wisconsin
	Kimberly-Clark Co.	Neenah	Wisconsin
	Marinette & Menominee Paper Co.	Menominee	Wisconsin
	Robertson Paper Box Co.	Rockland	Montville, Conn.
	Sorg-Oglesby-Smith Paper Co.	Smith	Middletown, Ohio
	United States Gypsum Co.	Gypsum	Ohio
	United States Gypsum Co.	N. Kansas City	Missouri
	United States Gypsum Co.	Lancaster	Ohio
	Upson Company	Board	Lockport, N. Y.

Unique Trial—Safety vs. Horseplay

The judicial branch of the Safety Council of the Falls Manufacturing Company, Oconto Falls, Wisconsin, recently tried a case for the Safety Committee of the Marinette & Menominee Paper Company at Marinette.

The case in question grew out of a slight injury to two men indulging in horseplay. This court is a very efficient part of the Council, consisting of judge, prosecuting attorney, clerk, and sheriff, also providing attorneys for defense; all of the members being selected from the employees of the mill.

The trial held at the Marinette Mill was for the purpose of determining whether or not the two men injured were guilty of horseplay resulting in injury and several days lost time, which could in no way be attributed to their work.

In order to make the whole affair as impartial as possible, the jury was selected from the employees of the Menominee Mill and each juror before being accepted was put through severe questioning as to his eligibility to sit on the jury. After the questioning of all the witnesses by the prosecutor and defense attorneys, record of which was taken by competent stenographers, the jurors filed into a side room and in a very few moments returned a verdict of guilty of "horseplay and breaking the rules of the Company."

IMPERFECT SCORES

GROUP A				GROUP B				GROUP C			
		Points				Points				Points	
Key	Rank	Credits	Debits	Key	Rank	Credits	Debits	Key	Rank	Credits	Debits
A- 6	2	544.030		B- 1	6	519.455		C-44	18	397.045	
A- 7	3	534.670		B-18	7	494.785		C-23	19	385.570	
A-11	4	512.315		B-23	8	493.645		C-46	20	376.630	
A-15	5	486.530		B- 2	9	468.815		C- 9	21	297.615	
A-12	6	457.985		B- 4	10	460.745		C-42	22	193.570	
A-10	7	417.015		B-15	11	455.555		C-26	23	172.830	
A- 9	8	407.185		B-25	12	449.730		C- 3	24	166.585	
A-14	9	403.615		B-10	13	435.785		C-54	25	158.470	
A-22	10	339.815		B-33	14	391.840		C-51	26	156.800	
A- 3	11	261.845		B-13	15	384.970		C-24	27	151.045	
A-17	12	253.830		B-17	16	383.345		C-38	28	107.430	
A-24	13	177.885		B-29	17	353.930		C-17	29	102.015	
A- 8	14	170.930		B- 6	18	346.530		C-34	30	85.415	
A-16	15	159.570		B-31	19	312.645		C-25	31	34.685	
A- 4	16	113.545		B-21	20	302.030		C-43	32	34.270	
A- 1	17	8.745		B-14	21	261.515		C-28	33	29.200	
A- 5	18		9.615	B-24	22	140.030		C-19	34		21.045
A-26	19		82.255	B- 5	23	109.555		C-33	35		49.430
A-25	20		78.145	B-27	24	70.100		C- 6	36		61.030
A-18	21		135.030	B-22	25		0.420	C-61	37		82.545
A-21	22		197.615	B-19	26		63.755	C-55	38		153.015
A- 2	23		351.170	B-32	27		156.130	C-52	39		159.500
A-20	24		1082.470	B-28	28		201.770	C- 8	40		161.845
A-23	25		1473.145	B-12	29		237.100	C-35	41		224.030
				B-36	30		333.155	C-11	42		294.500
				B- 7	31		349.230	C-10	43		356.145
				B- 9	32		541.085	C-13	44		382.945
				B-34	33		568.430	C- 1	45		417.730
				B-35	34		722.500	C- 5	46		421.385
				B-30	35		1059.055	C-31	47		428.245
								C-14	48		435.130
								C-59	49		473.500
								C-18	50		490.885
								C-60	51		578.445
								C-45	52		591.785
								C-16	53		616.470
								C-50	54		758.570
Mills Not Reporting								C- 7	55		937.530
A-19	C-22							C-21	56		1077.100
B- 8	C-32							C-48	57		1178.685
	C-36							C- 4	58		2110.945

The judge then pronounced a sentence of 10 days' layoff without pay to apply to both men.

Approximately 150 employees attended the trial and from expressions heard from a number of them, it was felt that the court had been more than fair with the defendants.

The trial was held, not so much to punish the two men, as it was for the purpose of an example to the rest of the employees. From various sources comes the report that it did more to boost Safety in the mill at Marinette than any other one thing that has been done during the past year. It has been a new departure in employee representation in mill activities, and is being watched with interest by the mills in the Fox River Valley.

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of February 29, 1928

Participant	Mill	Rate	Participant	Mill	Rate
International Paper Co.	Riley	0	Gardner & Harvey Co.	No. 2	.30
Kimberly-Clark Co.	Neenah	0	Union Bag & Paper Corp.	Allen	.45
U. S. Gypsum Co.	Gypsum	0	International Paper Co.	Livermore	.51
Lincoln Pulp & Paper Co.	Lincoln	.035	Robertson Paper Co.	Montville	.52
Upson Company, The	Board	.04	Lincoln Pulp & Paper Co.	Lyhster	.58
Kimberly-Clark Co.	Atlas	.08	Union Bag & Paper Corp.	No. 5	.58
Gardner & Harvey Co.	No. 1	.16	Mead Pulp & Paper Co.	Peerless	.85
Adams Bag Co.	Chagrin Falls	.22	Union Bag & Paper Corp.	Fenimore Paper	2.81
Gardner & Harvey Co.	No. 3	.22	Northwest Paper Co.	Brainerd	3.02
International Paper Co.	Winnipiseogee	.25	Lincoln Pulp & Paper Co.	Sulphite	3.46
Bergstrom Paper Co.	Neenah	.27			

Group A—Nekoosa-Edwards Paper Co. Combined Mills	.73	Group B—International Paper Co., Niagara Falls	.28

Wisconsin Forestry Conference

Badger State Leads Movement—Is First State to Hold Meeting for Conservation and Reforestation

RECALLING the days when virgin forests covered vast areas of the State, the habitat of wild life, the paradise of fisherman and hunter, Wisconsin now looks upon its millions of acres of denuded and burned lands where little evidence remains of nature's former grandeur, and, like a people viewing the ruins of a beloved city, plans to build—to bring back the scenic beauty of pioneer days, and to perpetuate its forests as a heritage to future generations.

This common interest drew a large and earnest gathering from all parts of the State to attend the Forestry Conference held at the New Phister Hotel, Milwaukee, March 28 and 29, 1928, under the auspices of the Chamber of Commerce of the United States and the Milwaukee Association of Commerce.

A nation-wide movement for conservation and growing of trees was inaugurated at the First Commercial Forestry Conference called by the Chamber of Commerce of the United States at Chicago, last December. Wisconsin is justly proud of its leadership, the Milwaukee conference being the first State meeting held since the inception of the national forestry movement.

WEDNESDAY MORNING

Purpose of the Conference

The conference chairman, D. C. Everest, president of the American Paper and Pulp Association, opened the meeting. He spoke on "A Bird's Eye View," and defined the purpose of the conference in one sentence—"To outline ways and means of perpetuating the present industrial, commercial, agricultural and recreational position of the State of Wisconsin." The reminder was given out that within the last generation Wisconsin has fallen from fourth place as a lumber producing state, occupying during the past few years positions ranging from eleventh to fourteenth place. Many villages have been wiped out by the exhaustion of timber in the locality. An adoption of a forestry policy might have changed this situation, and instead of deserted villages, thriving communities would now exist. The mistakes of the past, however, should not be dwelt upon. The present timber supply should be conserved during the time required for a new crop to grow. Providing a perpetual growth of timber was pointed out to be as necessary and profitable as providing for agricultural crops. No problem which involves the people of the country is comparable to that of forestry.

The Land and Forest Situation in Wisconsin

At the beginning of this section of the program, Mr. Everest introduced Dean H. L. Russell, of the College of Agriculture, University of Wisconsin, who presided as session chairman. In his opening remarks, Dean Russell likened the State of Wisconsin to a corporation which was operating its plant at only 25 per cent capacity. With an acreage of about 35 million acres, Wisconsin is only working about nine and a half million. These idle acres must be put to work.

The Land Situation

Speaking on this subject, B. H. Hibbard, Professor Agricultural Economics, University of Wisconsin, displayed maps of a number of counties in the northern part of the State, showing large areas of land on which the timber has been cut, and which are reverting to the counties for non-payment of taxes. These counties have not taken title to this land as they have not known just what to do with it. What shall be done with this land which is being thrown back as a public domain with a challenge as to how it shall be used?

The Forest Situation

Interesting and instructive, though startling in its mathematical conclusions, was the address given by Dr. Raphael Zon, director of the Lake States Forest Experiment Station, St. Paul, Minn.

How Long Will Wisconsin Forests Last?—In answer to this question, Dr. Zon gave the following analysis: There remains today in Wisconsin about 12,500,000,000 feet of merchantable timber. This includes pine, hemlock, spruce, cedar, and all the hardwoods, such as maple, birch and beech. Each year a little over one billion board feet of lumber and over 500,000 cords of pulpwood are being cut within the State, and more than this amount imported from other states. If the amount of timber grown be disregarded, the merchantable stand at the present rate of cutting for lumber and pulpwood would not last more than about twelve years.

Principal Growth on Cut-over Land—Of some 18,000,000 acres of land classed as forest land in Wisconsin, only about 2,000,000 acres are covered with old merchantable timber. The rest is cut-over land, of which about 7,000,000 acres are so badly burned that they are not coming back to forest at all; about 4,000.000 acres of cut-over land are coming up to merchantable second growth, and another 5,000,000 acres are covered with second growth of cordwood size. Some growth is taking place on this cut-over land, and this may seem strange after all that has been said about forest devastation, but there is actually more wood being grown in Wisconsin today than is being cut. This would be very encouraging if the growth which is taking place was the kind of timber Wisconsin needs most and uses most.

Of What Timber Does the Growth Consist?—Dr. Zon informed the conference that recent studies of the Experiment Station show that of the hardwood timber which is being cut at the rate of about one billion feet a year, only about one-third is replaced by growth, and two-thirds is at the expense of the small reserve of old timber accumulated during the past centuries. Of spruce pulpwood, which the State uses to the amount of about 400,000 cords a year, it replaces by growth only 50,000 cords a year, and must get 350,000 cords either by depleting the few remaining stands of merchantable timber or by importing it from Minnesota and Upper Michigan. Of hemlock, which is used in the State at the rate of 539,000 cords a year, practically nothing is replaced by growth. The demand is being taken from hemlock capital accumulated in the past.

Where, then, does the growth take place? It takes place in the aspen or popple stands. There are some 7,000,000 acres of popple land in the State which grows at the rate of 2,500,000 cords a year. Yet only about 12,000 cords are used in a year. In spite of the fact that more wood is growing today in the State than is being cut, the kind of wood which is most in demand—the hardwood lumber, the spruce and hemlock pulpwood—is being depleted at a rapid rate.

Dr. Zon declared that the vast area of some 7,000,000 acres of badly burned over and ruined land should be replaced. At present, the State is planting about 1,000 acres per year. At such a rate, it will take 7,000 years to plant this 7,000,000 acres.

The Need for Land Classification

Walter A. Duffy, Commissioner of Agriculture, Madison, recognized land classification as the first step toward a solution of the forestry problem. An inventory of land should be taken to determine its value for growing trees or agricultural crops. Experiments of the past which left the production of the land to a trial have been costly. The land inventory will mark the dawn of a new era in American civilization, and will permit a correlation of the various economic factors upon which the foundation of our free institution rests.

What Forests Mean

Wm. Mauthe, chairman Wisconsin Conservation Commission, was chairman of this session. He assured the conference that the Commission is co-operating in every possible way to further the movement. Commendation was voiced for the support of the College of Agriculture, the Izaak Walton League and many industrial organizations of the State. In Mr. Mauthe's opinion, Wisconsin's first task in solving the reforestation problem is the preparation of a workable program and development of a common understanding of the importance of forests and the practice of commercial forestry.

To the Public—Forests mean five things to the public, according to Assemblyman Alvin C. Reis, Madison.

First—Forests at home will mean cheaper timber to the consuming industries. It is now necessary to import much of the wood that is used in the State.

Second—Forests mean industries, while exhausted forest resources mean industrial decline with consequent social ebb and exodus.

Third—Forests mean revenue to the government, particularly a local government. Depleted forests with resulting idle and unimproved lands mean approximate bankruptcy to many communities.

Fourth—Forests mean playgrounds. This means $100,000 a year in tourist trade.

Fifth—Forests mean a state pride and state wealth.

To the Lumber Industry—M. P. McCullough, of the Brooks and Ross Lumber Co., Wausau, Wis., stressed the fact that sawmills must be located within a reasonable distance of timber. Wisconsin forests brought the lumber industry to the State in the early days. Woodworking interests have followed to be near the source of supply. To maintain these industries, the forests must be preserved. The new forest crop tax law makes it worth while to preserve the forest cover left after logging merchantable timber.

WEDNESDAY AFTERNOON

To the Paper and Pulp Industry—Continuing the session on What Forests Mean, F. J. Sensenbrenner, president of Kimberly-Clark Co., Neenah, Wis., brought to the conference a convincing message that the paper industry is vitally interested in the conservation of forests and reforestation.

In 1928, the paper and pulp industry of the United States consumed 652,000 cords of pulpwood more than in any previous year of its history, or a total of 6,766,007 cords, of which 1,276,490 cords were imported. In addition, pulp was imported in the production of which was consumed 3,158,000 cords, and paper was imported in the production of which was consumed 2,650,000 cords. In other words, if in 1928 United States mills had manufactured all the pulp consumed by the mills of this country in the manufacture of paper, 9,924,007 cords would have been consumed, and if United States mills had manufactured all the pulp necessary to produce the paper consumed in this country, 12,574,007 cords would have been consumed.

In 1911, newsprint paper was put on the free list. The Canadian government encouraged the building of newsprint mills in Canada by offers of abundant supplies of raw materials and ample water power at low rates. The result was that Canadian newsprint rose from 350,000 tons in 1913 to the vast total of 2,087,000 tons in 1927, and Canadian exports of newsprint to the United States rose from 55,830 tons in 1913 to over 1,800,000 tons in 1927. In 1928, for the first time in history, Canadian production exceeded that of this country. When mills now in course of construction in Canada come into production, Canada's load will be substantially increased and the situation of the United States mills will become increasingly serious, especially such mills which, through lack of capital or other causes, have not protected their future by investments in large stands of timber.

It was Mr. Sensenbrenner's opinion, if forty years ago the nation had adopted a broad and abundantly financed policy of conservation and reforestation, much of the shifting of the industry to Canada would have been deferred, if not entirely avoided.

To the Railroads—H. S. Larimer, land commissioner, Chicago and North Western Railway, Chicago, declared that the railroads have always been dependent upon the forest and forest products for a great many of their necessities. Many lines in timber regions grew from spurs which were built into the sawmills and where communities later developed. Substitutes for railroad ties have been tried, but so far nothing has been found that will take the place of wood for this purpose. The railroads also reap a substantial return from tourists seeking recreation.

To Hydro-Electric Power—Speaking of the relation of trees to hydro-electric power development, M. H. Frank, of the Wisconsin Power and Light Co., covered a most interesting phase of this subject—that the planting of trees on the banks of a stream where such development is anticipated prevents erosion of the soil, thus insuring a uniform stream flow which is of vital importance, and beautifying the surroundings.

To the Resort Owners—Burt Williams of the Land O' Lakes Magazine gave a number of illustrations to prove that there are many deserted resort communities in the State, the principal reason for this being that without wooded surroundings no resort can exist. He gave the opinion that not only would profit accrue to resort owners from this movement, but the providing of recreation for the populous centers of sister states would give that upon which no monetary value can be placed—health, happiness and lengthening of life.

To Outdoor Organizations—The Izaak Walton League of Wisconsin is giving valuable assistance in the forestry movement. Its president, W. J. P. Aberg, outlined the work which the league has so far accomplished in the State. He stated that the tourist is the only buyer who buys the crop, uses it, and leaves it as he found it. All that Wisconsin has spent in the development of its outdoors, has been the income from fishing and hunting licenses. This organization, and similar ones, realize that their interest is founded on sentiment, but this aspect is recognized as an important one, and many lumbermen and those interested in the pulp and paper industry have given aid to this branch of the work.

To Wisconsin Manufacturers—George F. Kull, secretary Wisconsin Manufacturers' Association, Madison, exhibited charts giving statistics which were compiled from the operation of 791 manufacturing establishments in the State, including pulp and paper. These figures indicated combined investment, annual wages paid, lumber consumed, and the ranking of 20 leading secondary and primary wood using industries in the State. In the latter table, pulp and paper ranked fourth. One chart showed 57 pulp and paper mills in the State representing a capital investment of $120,000,000.

To Retail Lumbermen—That a reforestation program can be made successful only through wise use of material, was one of the leading points in an address given by Ben F. Springer, president Wisconsin Retail Lumbermen's Association. The retail lumberman is building a broader program of merchandising by working out in a technical manner the uses and application of his material. He is teaching the public how to build homes, how to make one board do the work of two. He is meeting the issue by standardization.

To Employees—A perpetual supply of timber will provide steady employment for the industrial worker, and will insure the future of himself and his family. R. G. Knutson of the State Industrial Commission spoke on the fluctuation of these workers which is easily traced in certain localities to the decline of the wood using industries.

How to Meet the Forest Situation

W. J. P. Aberg, chairman of this session, announced that the conference had heard a review of the situation as it existed at the present time, and that the remainder of the afternoon would be devoted to suggestions to remedy some of the recognized obstacles.

Fire Protection and Suppression

Responsibility of State, General Public and Private Land Owner—In the suppression of fires, Fred W. Luening, of the Milwaukee Journal, stated the aid of the public must be sought. They must be awakened to the fact that it is as

disastrous to be careless with fire in the woods as in their homes. Mr. Luening believed, however, that fire fighting is not looked upon as a private undertaking, but a job for the State. A number of illustrations were given to show the advantage of using modern fire fighting equipment in the woods over the old time methods.

An Example of Protection on Private Lands—A complete review of the efforts of his company in fire protection work was given by Charles L. Cecil, of the Cornell Wood Products Company, Duluth. There is, however, according to Mr. Cecil, no absolute fire protection, but the hazard can be minimized by scientific organization.

What Is Needed—The two greatest needs for forest fire prevention are early organization and equipment of state prevention forces, and a campaign to acquaint the man on the land with the importance of the work. This was the opinion of C. L. Harrington, superintendent of State Forests and Parks. He also made the statement that the fisherman and the tourist, who are blamed for most forest fires, are not responsible for such destruction. Tourists do not visit the State during the periods of greatest fire hazard, and are less responsible for fires than the residents of the wooded districts.

DINNER MEETING

The banquet at 6:30 Wednesday evening, was held in the Fern Room of the hotel, and was attended by practically the entire number registered at the conference. This meeting was one of the most interesting parts of the program. The dinner, the entertainment, and general atmosphere of friendliness were enjoyed by all. Seldom does a gathering boast a group of notables such as was seated at the speakers' table.

Oscar F. Stotzer, president of the Milwaukee Association of Commerce, acted as toastmaster, and in his preliminary remarks, referred to pleas made during the programs of the day, for action.

Hon. Daniel W. Hoan, Mayor of Milwaukee, was introduced, and welcomed the conference in a most cordial manner. He spoke of the adaptability of the State for the growing of trees, and urged reforestation as a means of lifting the tax burden from farmers of barren sections of the State. The Mayor also spoke with pride of the work his city is accomplishing. Nine years ago Milwaukee established a forestry division of the park board. The function of this organization is to plant new trees, remove dead ones, inspect the live trees and keep them trimmed.

Commerce and Forestry

The greatest obstacle to a national reforestation movement is the present system of taxation, was the statement made by Fred W. Sargent, president of the Chicago and North Western Railway and director of the United States Chamber of Commerce. The taxation system by levying on the amount of timber stand instead of the yield of the land, forces many owners to cut the timber to pay taxes. That which has been accomplished, has been in the face of government discouragement rather than through government aid. When there is a national reforestation policy and a system of taxation based on yield rather than on stand, the greatest obstacle to conservation will have been removed.

Mr. Sargent gave an outline of the program recommended by the United States Chamber of Commerce, which includes administration of fire prevention by Federal and State Governments, a new system of taxation, federal research, an inventory of the forests and reforestation of waste lands by state and national agencies.

Messages from Secretary Jardine and Forester Stuart

L. F. Kneipp, assistant forester, United States Forest Service, read messages to the conference from Secretary W. M. Jardine and Forester R. Y. Stuart, who were unable to be present.

Mr. Kneipp reviewed the principles adopted by the United States Chamber of Commerce to govern its national reforestation program. He pointed out that the conditions in Wisconsin are practically the same as those which exist in many other states, and the benefits derived from this conference will be of assistance and inspiration to the forestry service.

A Glance Ahead in Wisconsin Forestry

Governor Fred R. Zimmerman spoke hopefully of the rehabilitation of the State's natural resources. In perspective, he saw the 7,000,000 acres of denuded land covered with thrifty, growing trees. This would be accomplished by planting 30,000 acres each year instead of 1,000 annually as is now being done. Forests mean control of stream flow, increased water power, and the development of all industry. The Governor visioned the restoration of timber lands to provide raw material for pulp and paper mills, and furnish employment for a large number of workers.

The conference was assured of the support of the State in every way possible, by giving fire protection and modifying the tax laws. The eve of a state-wide movement, the Governor declared, is at hand, which will not only present every need of the country's natural resources, but will in time repair much of the destruction of less wise preceding generations. It is imperative that the forests be rebuilt. A country perishes when its forests are gone.

Importance of Forests to Social Welfare of Wisconsin

The concluding address of the evening was delivered by Glenn Frank, president of the University of Wisconsin. President Frank urged that a thorough conservation policy be put into effect. Conservation means more than the planting of a few trees and the protection of fish. It is more than luring men out of stuffy offices into the atmosphere of field and wood. These are but incidental steps. Conservation means that this generation, and those that follow, must make good the mistakes of the pioneer who was content to take all he could use of his immediate environment and move on to fresh fields. This age still thinks with the mind of the pioneer in the cash return of a year instead of the civilization of a century. Intelligent forestry must be substituted for mere timber slashing.

President Frank declared the people of today are challenged to become genuine statesmen of the country's natural resources. This is real conservation, and involves a sweeping reform of the American mind as well as reforestation of areas. Any intelligent forestry program will include cooperation of the Government with private owners to make reforestation economically practical. This includes two things—government fire protection and taxation that will stimulate growth.

THURSDAY MORNING

Commercial Forestry

At the first session on Thursday, D. C. Everest, conference chairman, opened the meeting and introduced F. K. Bissell, former president Northern Hardwood and Hemlock Manufacturers Association, who presided over the session on Commercial Forestry.

State's Responsibility in Commercial Reforestation Program

L. B. Nagler, Director of Conservation, Madison, stated the forest crop law had removed the greatest obstacle to the adoption of a program of forestry on a scale of sufficient magnitude to accomplish the desired purpose by making it possible for the land owner to undertake such a proposition without being made a bankrupt. This law marks a distinct departure in our method of taxation. It provides in effect that the State shall co-operate with the owners of forest land and bear the burden of carrying charges over the long period of years that must elapse before the crop matures and yields returns. The growing of forests is such a slow process that only an altruist will undertake it. The planter of trees cannot expect with any degree of confidence that the crop of timber will be harvested within his lifetime. For this reason, many believe the task should only be undertaken by the State.

Progress in Farm Timberlot Forestry

F. C. Wilson, extension forester, University of Wisconsin, told of some of the results from small lots of trees planted in Wisconsin by farmers. The oldest planting of Norway pine in the State is now 75 feet high and the trees are 14 inches

in diameter. This planting was made in 1876. A tract of spruce planted in Pierce County 34 years ago now has an estimated stand of 43 cords of pulpwood to the acre. This is a yield of about one and a quarter cords an acre for each year since it was planted, or an annual yield of about $15.00 per acre.

Reforestation on the Nekoosa-Edwards Holdings

F. G. Kilp, forester, Nekoosa-Edwards Paper Co., Port Edwards, Wis., outlined that which his company has accomplished since beginning its reforestation program in the fall of 1925. At that time a survey revealed that 1,500 to 2,000 acres of lawn owned by this company in the vicinity of Port Edwards and Nekoosa, were found to be in a non-productive state and ideally fit for artificial planting. The soil was especially adapted to the growth of Norway and jack pine. Between 2,000 and 3,000 acres of this same kind of land were found to be either partially or fully covered with Norway, white and jack pine second growth or young reproduction. Uncontrolled forest fires had left their damaging effect upon practically every acre examined, and this accounted in some measure for the unproductive condition of the land.

Forest Nursery—A forest nursery established by this company in the spring of 1926 now has a yearly production of 500,000 Conifer trees. Several important reasons encouraged the establishment of this nursery. First, the difference in the beginning of the planting season between the State nursery location (the only practical place to buy trees for forest planting) and Central Wisconsin, where the season runs from two to three weeks earlier. Second, the convenience of being able to plant as soon as a crew assembled. Third, all planting stock may be field planted within a few hours after being raised from the nursery beds.

Jack pine seedlings for field planting purposes were difficult to locate, but Mr. Kilp stated that in 1926, there were obtained 100,000 three year old seedlings from the Cloquet Experiment Station, Cloquet, Minn., and from these, 55,000 were field planted. 12,000 two year old jack pine seedlings were also obtained from the United States Forest Service at East Tawas, Mich. During the spring of 1927 33,000 jack and Norway pine seedlings were field planted, making a total of approximately 100,000 trees the first two years.

During the fall of 1927, 240,000 jack pine seedlings from the company's nursery were field planted, making the total plantings to date, 340,000 trees. The nursery will furnish 500,000 trees for field planting this year.

Fire Protection—The company has made every provision to protect its young trees from fire. A 70 foot fire tower has been established and operated during the past year. Another will be built this year. Fire trucks, and all necessary fire fighting equipment has been installed and an emergency crew organized. All company fire towers will be available for use to the Wisconsin Conservation Commission when the proposed district number 11 in Wood, Juneau and Adams Counties is organized and in operation.

Possibility of Practicing Forestry in Actual Logging Operations

Mr. W. A. Holt, president Holt Lumber Company, Oconto, Wis., believed that the deplorable conditions which now exist might be improved by selective cutting of the forests. It has been demonstrated that in the Lake States the small hardwood trees are manufactured into lumber at a loss, and the good trees have to pay for the poor ones. Just where the line comes depends on the cost of logging and the quality of the timber, but generally speaking, a hardwood log under fourteen inches does not pay, and yet it has taken probably one hundred years to produce a tree to that size.

It was pointed out that selective logging is not new. The Lake States were all logged in that way, the pine, and in many places the other floatable timber having been removed, and the heavier unfloatable timber left.

Mr. Holt stated there is a movement on foot to introduce Northern maple and birch, stained and finished in beautiful colors. This should create a demand for sound, knotted lumber which is even more beautiful than the clear wood when finished in colors. This would make more valuable the smaller logs, from which the greater percentage of knotty lumber comes, and make it commercially possible to manufacture timber which is not as old as is now necessary to get profitable grades.

Financial Aspects of Forest Developments

Merrill Coit, of Baker, Fentress & Co., Chicago, stated that his company specialized in the financing of timber and lumber operations. Since financing is fundamentally a credit operation, future values and returns are an important consideration. Mr. Coit stated there is little likelihood that business enterprises will furnish loans for reforestation of cut-over lands, as the length of time required to grow the crop is too great. The public would not be interested in making investments where returns are so long deferred. One important point brought out was that the burning of immature timber is complete, whereas there is some salvage from full grown forests that have been burned.

Forest Utilization

In opening this session, Howard F. Weiss, session chairman, expressed the idea that trees should not be thought of as producing so many logs, but as developing wood substance, or a plant which grows cellulose.

Importance of Close Utilization of Forest Products to the Profitable Growing of Trees

This subject was covered by C. P. Winslow, director Forest Products Laboratory, U. S. Forest Service, Madison. Mr. Winslow emphatically stated that the forests are needed, not to have them, but to use them.

Utilization—Growth and utilization are the Siamese twins of commercial forestry. A number of exhibits were placed before the conference to bring out the point of proper classification. Pieces of wood from furniture and interior woodwork were shown to have been made of wood not suited for that purpose. Blocks of wood which looked alike were of different weight. A microscopic picture showed one to be very porous. An instrument which resembled a clinical thermometer registered the moisture content of wood in a very few minutes. New designs for wooden crates were explained, by which less material is used, yet the crate had three times the rigidity of the old type.

Research—New uses are constantly being brought forth for wood. Mr. Winslow exhibited several kinds of synthetic board and insulated board which are being made commercially from waste softwoods. Rayon, from wood pulp, is already in general use, and synthetic wool and cotton, made from wood, have been perfected, although they are not being marketed commercially in this country. Wisconsin paper mills are now making wrapping paper from jack pine, for which 15 years ago, it was difficult to find a use.

THURSDAY AFTERNOON

Forest Taxation

George W. Blanchard, session chairman, opened the afternoon meeting and stated that the most important point in the program had been reached. Taxation is one of the perplexing problems connected with the subject of forestry. Forest taxation may be either constructive or destructive. In any event, if the Wisconsin Forest Crop Law will result in the registration of the waste lands of the State, or the major portion of them, then may it well be said that this law is a success.

The Forest Crop Law—Its Administration

Eugene Wengert of the Wisconsin Conservation Commission, brought out some of the important features of the Forest Crop Law. The adoption of this new law means an overthrow of a taxation policy of long standing. This law provides that in purpose it shall encourage a policy of preserving from destruction or of premature cutting the remaining forest growth in the State, and of reproducing and growing for the future adequate crops of forest products on lands not more useful for other purposes so that such lands shall continue to furnish recurring forest crops for commercial use.

Operation of the Law—After the registration of the land,

the Conservation Commission determines the adaptability of the land to the growing of forest products. The Commission has adopted a very liberal policy in registering lands under the law. The procedure of registering lands is very simple. After the Commission has determined the stand of merchantable timber that will be developed on such lands within a reasonable time, such lands are held permanently for the growing of timber, and the laws attach to the land for the period of fifty years. Even after fifty years the benefits of the law may be extended by mutual consent.

What Are the Advantages?—After the land is registered, the timber thereon is no longer considered a part of the real estate for taxing purposes. The real estate must be taxed, the growing timber not taxed at all. The local tax authorities have no further control over such land, it is in charge of the State Tax Commission and Conservation Commission. The last figures obtained showed that 50,000 acres have been or were in process of being registered. It is still too early to comment on the success of this law, as many factors enter into the success of this new industry.

—Its Appeal to the Pulpwood Operator

In answering the question "How does the forest crop law appeal to the pulpwood operator?", W. R. Wheaton of the Pulpwood Company, Appleton, Wis., cited the number of applications that have been received by the Conservation Commission. To date, applications for registration of 61,555 acres of land have been received. Of this amount, 19 per cent is by lumber companies, 47 per cent by paper mills, and the balance of 34 per cent largely by small land owners, who undoubtedly expect to market a large portion of the product of those lands in the form of pulpwood. Mr. Wheaton had knowledge of 25,000 acres of land to be filed in the near future by parties who expect to market the future products largely in pulpwood. Of this 25,000 acres, approximately 10,000 acres will be filed by paper mills and the balance by pulpwood operators. It is expected by the Commission that 100,000 acres will be filed under the law before the end of the present fiscal year.

The Forest Crop Law Must Be Sold—This law is in its infancy and it has been necessary to educate the timber land owner to what it means. Pulpwood operators are interested, but uncertain as to its requirements. If the Conservation Commission could and would make a public declaration in general terms of its interpretation of the words, "practice forestry," as set up in the law, it would clarify this situation materially.

—Its Appeal to the County Board

R. B. Goodman, secretary Goodman Lumber Company, Marinette, felt this phase of the subject to be difficult of solution, as there is, so he termed it, no remedy for delinquent tax problems. There are many lands in the State that are not good enough to be entered under the forest crop law. These lands constitute a county problem which is extremely difficult. The county of Marinette has 100,000 acres of land that it has acquired through delinquent taxes.

Summation and Resolutions

In closing the conference, D. C. Everest, conference chairman, reviewed some of the vital points brought out during the meetings. The land situation was regarded as one of the important phases. Wisconsin has been running at 25 per cent capacity, one speaker stated, and such a condition could not long continue in any industrial enterprise. A state is no exception. It was suggested that if a forestry program is to be successfully carried out, an inventory of the natural resources must be taken, and the land classified to determine its adaptability. The problem cannot be solved quickly. Errors will react strongly against success. One or two failures may do more to upset the construction work already begun than any other thing. Some mistakes will be made, of course; some may become discouraged, but the work must go on.

Mr. Everest pointed out that one of the most essential requirements in the movement is the employment of the best forestry talent obtainable in the solution of these problems. The work must be carried out scientifically.

George W. Blanchard, chairman of the committee on Resolutions, was asked to close the conference by reading the committee's recommendations. There were unanimously adopted by the conference, and were as follows:

Recommendations of the Conference

Wisconsin's first commercial forestry conference has aided very materially in crystallizing a public interest, which indicates wide possibilities of successfully promoting commercial reforestation, and in view of the opinion of many who are interested in this movement that a permanent organization should be effected to keep alive and further promote the interest that has been aroused, it is suggested that the Executive Committee of the Conference be, and it is hereby authorized to formulate a plan for the creation of a permanent commercial forestry association for the State.

The development of the forest resources of Wisconsin depends upon the accumulation of knowledge and the development of a technique bearing upon the reproduction, growth, and utilization of forests, the methods of harvesting the crop and the adequate development of a complete program for forestry in all its phases. With these things in mind, this conference endorses and commends the work of the Forest Products Laboratory at Madison, the Lake States Forest Experiment Station of the United States Forest Service, the College of Agriculture of the University of Wisconsin, and the Wisconsin Conservation Commission. We favor the extension of the activities of the experiment station within the State and commend the co-operative efforts of all of these agencies. We recommend to these several agencies that their work along research lines be more definitely unified and their activities correlated.

We urge the continuation and completion of the plan of the land economic survey undertaken by the State Commissioner of Agriculture in co-operation with other agencies and suggest that this work be extended, if possible, to the several counties of the State.

We appeal to the press of the State to assist in the further development of public interest with reference to a sound and complete forestry program, and to the organizations interested in industrial activities of a state-wide character, we suggest that special attention be given to the promotion of a forestry policy through the organization of special committee for this purpose.

In connection with educational development, we heartily endorse the movement to develop school forests and instruction in tree planting and the care of forests in connection with our public schools, and we especially commend the efforts now being made for the development of junior organizations for these purposes.

We recommend that county boards and other local agencies give careful study to reforestation with a view toward the solution of the idle land problem and we commend to all counties the plan for the development of county forestry programs, the acquiring of title to tax delinquent lands, and the prompt use of such lands for reforestation purposes.

In view of the fact that Wisconsin contains millions of acres of denuded and unproductive forest lands, and of lands covered with unsatisfactory growth, which lands will not contribute to the wealth of the State within any reasonable time unless planted to valuable forest trees, this conference favors a large increase in the rate at which such lands are now being replanted. We urge a substantial increase in the State's facilities for the production of forest planting stock for use on both State and private lands, to the end that the existing Trout Lake Nursery may adequately meet the needs for planting in Northern Wisconsin, and that a similar nursery in the Southern part of the State may supply the kinds of trees needed, and grow them under conditions suitable for their use in the Southern part of the State. Planting by State and private agencies should approach as rapidly as possible the scale already reached by the states more advanced in forestry, namely, a matter of twenty or thirty thousand acres per year instead of the 1,000 acres now being planted in Wisconsin.

This conference heartily endorses the efforts of the Wisconsin Conservation Commission to extend its organized fire

protection to all of the forest land in the State requiring such protection with a view to a complete field organization in the year 1928, and we commend the action of those owners of forest land who are co-operating in the protection of their property; to extend these activities, this conference favors the increase of State appropriations for fire protection and suppression.

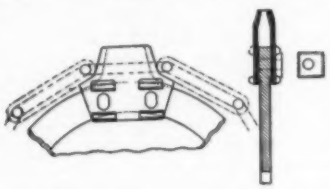
We endorse the principles of the McSweeney-McNary Forest Research Bill H. R. 8091. We endorse a national forest for the State of Wisconsin and urge upon the localities approved by the Federal government co-operation in the establishment of such forest.

We congratulate the Chamber of Commerce of the United States upon its activities in connection with the conference, and we especially urge the several states interested in forestry development to lend their aid through the Chamber of Commerce of the United States in this splendid work, and to that end believe conferences similar to this are of great value. We are deeply indebted to the Chamber and to the Milwaukee Association of Commerce for their able assistance in carrying out the purpose of this conference.

An Expansible Tooth Sprocket

A unique device for prolonging the life of sprocket chain as well as sustaining maximum efficiency of operation throughout its entire life, has been developed by The Union Chain Mfg. Co. of Sandusky, Ohio, sprocket chain manufacturers.

This is a specially designed expansible sprocket, the teeth of which may be adjusted from time to time to accommodate the natural wear and consequent elongation of the links of a chain. This elongation, though seemingly slight in any one link, is multiplied by the number of links in engagement with the sprocket, causing a misfit between chain and sprocket and a consequent jerky and noisy action; this shortens the life of both chain and sprockets, more or less power is wasted, and the trouble naturally increases with each day's added wear in the chain bearings.



As shown by the illustration the sprocket is constructed with adjustable teeth of special design. Both sides of the body rim are machined to insure true running and to receive the teeth which straddle and are firmly clamped to the rim. Turned bolts closely fitted in the rim project through elongated holes in the teeth, the latter being secured relatively to pitch diameter by means of square beveled-edge adjusting blocks fitted between lugs on the teeth; a hole is jig-drilled through the blocks at a point four varying distances from the edges, and when the blocks are mounted on the bolts the pitch diameter of the sprocket is governed by the arrangement of the blocks.

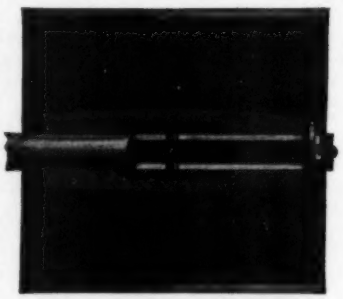
When received by the user, the sprocket is correctly assembled to properly fit the chain. After the chain has elongated beyond a proper fit on the sprocket, the nuts are released and the eccentric blocks readjusted so as to expand the teeth to a next larger pitch diameter. This takes but a few minutes to perform and is usually required only at long intervals, the wear and consequent elongation of the chain being greatly retarded by maintaining its proper fit on the sprocket. Extra thick lock washers under the nuts prevent any part from ever working loose.

Of course, the body never wears out and the alloy steel teeth, which may wear out after long service, are replaceable with new teeth. Thus four distinct advantages result from the introduction of this new sprocket—constant maximum efficiency, longer chain life, smoother and quieter running, and permanent sprocket installation.

New Standardized Jeffrey Belt Carriers

During 1927 Jeffrey belt carriers for Jeffrey belt conveyors were standardized so that the same stands and bases could be used with any one of the three types of pulleys—the plain bearing, the bronze bushed and the roller bearing. These grey iron pulleys share three characteristics:

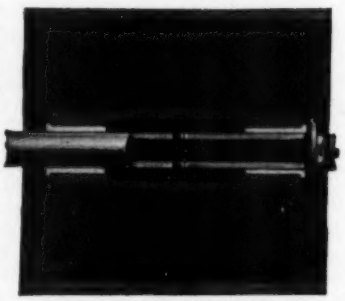
First, they are made with open ends. In handling finely reduced clay, sand, lime or cement the dust is apt to collect on closed end pulleys near the bearings, making extra work for the grease seals.



Plain Bearing

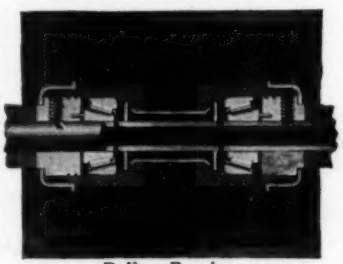
Second, in place of solid ends to insure rigidity of the walls, three arms join the hub and roll. Between the arms, six ribs provide additional lengthwise rigidity.

Third, the free carbon in the grey iron acts as a rust repellant. Such pulleys resist corrosion much better than steel pulleys, especially on wet jobs such as conveying washed sand or gravel.



Bronze Bushed Bearing

Pulleys with plain or bronze bushed bearings have hubs specially cored out to form large recessed grease pockets connecting with the Alemite pressure lubrication fittings at the end of the hollow shaft. These grease pockets are very useful on long belt conveyors where a few pulleys are often skipped over or neglected at the regular oiling. The reserve supply of grease will last until the next oiling where an ordinary pulley would run dry, stick, wear flat, and eventually ruin the belt.



Roller Bearing

Another advantage claimed for the grease pocket is that grease does not harden in the feed holes as in pulleys where the grease is fed directly to the bearings. Plain bearings pulleys that are worn may be drilled out and put back into service with new bronze bushings.

For belt conveyors installed to carry materials that are severe on metal bearings, Jeffrey makes a roller-bearing pulley pressure greased, accurately fitted and five times grease-sealed.

The labyrinth construction provides five pairs of closely joined metal surfaces keeping powdery abrasives from reaching the bearings. In addition grease under pressure from the inside flows all dirt outward. Slots in each collar make possible perfect adjustment and concentric running.

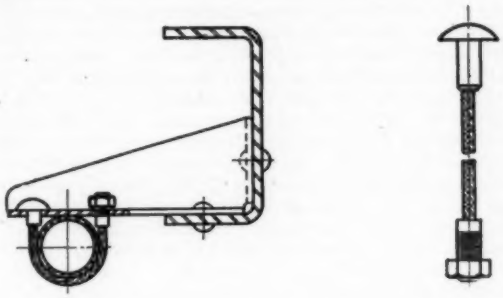
A Flexible Bolt

Through the development of the preformed type of wire rope which makes possible the attachment of fittings by the processing method that compels the fitting to become an integral part of the rope, the American Cable Company has recently perfected the Tru-Lay-Tru-Loc flexible bolt illustrated by the accompanying line drawing.

These new bolts may be used in countless places where rigid U bolts are impracticable. They are finding ready acceptance as auxiliary hangers for power shafts, suspension brackets for overhead steam or water piping, shackle bolts for temporary wall boxes, tanks, etc., for scaffolding and

tackle, on various parts of machinery, and in other places where semi-flexible connections are necessary.

The principle on which the new flexible bolt rests is the preformed type of wire rope. Preforming the wires and strands to the exact helical shape they must assume in the

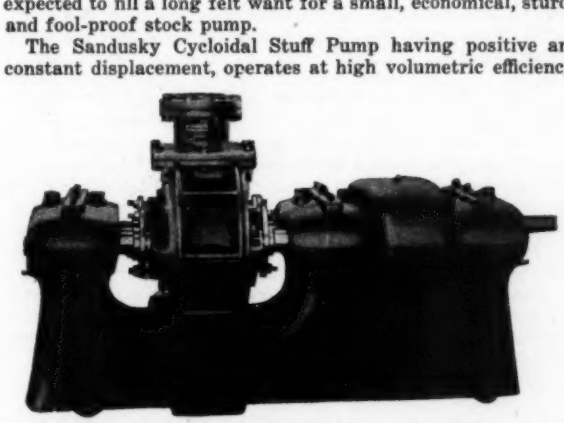


completed rope results in a cable that does not require seizing but may be cut like a rod. This type of rope permits a close fitting attachment to be slipped over the unseized end of the rope and to be processed so that the steel of the fitting cold flows into the interstices of the rope and thus becomes practically an integral part thereof. Naturally such fittings can be threaded for a nut or capped for a head. The flexible bolt which has resulted from these developments is available in varying lengths and holds promise for universal acceptance.

A New and Remarkable Stuff Pump

A new application of rotary pumps has been perfected by The Paper & Textile Machinery Co., Sandusky, Ohio, in the adaptation of their well known Sandusky Cycloidal Pump to stuff lifting purposes. This radical departure from the conventional types heretofore used for this class of service, is expected to fill a long felt want for a small, economical, sturdy and fool-proof stock pump.

The Sandusky Cycloidal Stuff Pump having positive and constant displacement, operates at high volumetric efficiency,



and is adaptable to a wide range of capacities and a variety of consistencies. There being no valves and parts having reciprocating motion, the stock flows uniformly with no pulsation at the discharge.

The pumps are made in three sizes having capacities as follows: the 12"x9" pump operating at maximum speed of 210 r.p.m., discharges 9.7 gallons per revolution, or better than 2,000 gallons per minute; the 10"x8" pump operating at maximum speed of 225 r.p.m., discharges 6 gallons per revolution or 1,350 gallons per minute; the 8"x6" size at 300 r.p.m., pumps 2.8 gallons per revolution, or 840 gallons per minute.

Other features of the Sandusky Cycloidal Stuff Pump include its simplicity of construction and economy in power consumption; it can be easily flushed out having no pockets for lodging stock; no adjustments are necessary for varying consistencies; parts are interchangeable for quick repair, and all surfaces exposed to the liquid are made from acid resisting chilled iron.

The Oliver Board Machine

New Use in Manufacture of Insulating Board

By C. FUHRMEISTER

An Oliver continuous and automatic filter has been developed for use as a cylinder mold on the wet end of a board machine where the formation of insulation board from cornstalk, licorice root, bagasse, or other fiber pulp of homogeneous formation is desired.

This application of the Oliver to the pulp and paper industry is comparatively recent, although an Oliver had been installed for experimental purposes for some time. The Oliver had been developed to a high state of perfection for use in paper mills for washing and thickening practically all types of pulp, and also as savealls. Thus the development of an Oliver for use at the wet end of a board machine was a natural one.

The Oliver forms a sheet which is entirely homogeneous having no weakness lengthwise or across the sheet; the sheet is formed by comparatively low vacuum, usually 10" to 15" at the Oliver discharge valve. Ordinarily, a Nash type wet vacuum pump is employed for inducing the vacuum.

The pulp is fed to the Oliver at approximately 1.25 per cent consistency and the drum revolves at a peripheral speed of 6.5' per minute. The sheet discharged is 7/8" thick and contains 80 per cent moisture, the moisture having been reduced by means of a press felt and roll. From the Oliver, the sheet passes on to table rolls and then through presses after which it is cut into sheets and fed into a dryer by means of tipples.

The sheet discharged from the dryer has a moisture content of approximately 2 per cent.

The finished board weighs approximately 0.7 pounds per square foot and is practically 7/16" thick.

The outstanding advantages of the Oliver mold over the usual multi-cylinder type are the elimination of the various laminations, elimination of felts, conservation of floor space, and perfect sheet formation. Further, the filtrate is quite free of fiber.

Olivers for this purpose can be built in many widths and the diameter of the cylinder may be either 5'5", 6' or 8' 1. The width of face is determined by the class of board to be produced. There are no difficulties encountered in the formation of an absolutely even and uniform sheet regardless of the length of the face of the Oliver cylinder.

Due to the Oliver cylinder being equipped with a top felt and press roll, the stock discharged is considerably dryer than that discharged from the usual cylinder mold, and therefore, it can be readily appreciated that a large steam saving is effected by the reduction of the moisture direct at the wet end of the machine.

A 8' diameter x 9' face Oliver has been installed in a board mill in New Jersey for well over a year. It has been giving complete satisfaction and much has been said about the excellent sheet formation.

This 8' diameter x 9' face Oliver produces approximately 70,000 square feet of 7/16" board per day, and another unit of the same size is being installed in Iowa which will produce approximately 100,000 square feet per day with an ultimate capacity of probably 200,000 square feet.

The John Johnson Turbo-Mixer Corp. has leased a suite of offices on the 40th floor of the Woolworth Building, New York, as general offices. In addition, an extensive laboratory has been leased nearby for research, development and experimental work in connection with the mixing problems of the many industries served by this company.

The Hammermill Paper Company announces the appointment of the Strickland Paper Co., Inc., Birmingham, Ala., to succeed the Diem & Wing Paper Co., as a Hammermill agent.

Bentley & Holmgren, Court Exchange Bldg., Bridgeport, Conn., have just been appointed to represent Foote Bros. Gear & Machine Co. in Connecticut and Western Massachusetts.

What Can We Do to Increase Net Profits?[1]

By C. OLIVER WELLINGTON, C. P. A.

THE situation in the paper industry as in many others, is of a potential and actual over-production, so that we have intense competition, and therefore, a greater need than ever before of knowing our costs and determining our sales and manufacturing policies closely and carefully.

How One Mill Made a Profit in 1921

Let me give you an illustration which perhaps will be of particular interest to paper mill executives, both those who are here, or those who may be reached as you talk over with them on your return the results of this convention. I remember back in 1921 I had occasion to visit a number of paper mills, and in that very bad year when sales were low, and with a general drop in prices, one particular mill came out pretty well, made a slight profit, while other mills in the industry made big losses. The way they did it was this: They had four machines, and they made up their minds that with business as it was they could not run four machines full, and they said, "We will become now a two machine mill." They lined up a budget of sales and manufacturing for operating on a two machine basis. They figured out the supply of help they would need to run two machines, and they tried to keep the two machines busy, simply forgetting that they had the other two machines at all. And what is more, they figured out their costs on that basis, and then absolutely refused to take any orders below the costs as figured. That sounds rather radical, particularly in those times when the average mill was grabbing for anything in the nature of an order, no matter what the price was. This particular mill made a little money that year, when other mills in that same section of the paper industry lost up in the hundreds of thousands of dollars, and the mills that tried hardest to run 100% full were the ones who lost the most money.

Selling Below Cost Does not Increase Consumption of Paper

The situation in 1921 was to some extent abnormal, but we have today a somewhat similar situation, where prices are not advancing and there is a great production and great competition for orders, and a very narrow margin. I would urge the executives to give very serious consideration to this problem, and see whether in the long run it is not good business to refuse to sell below cost. In the paper industry particularly a reduction in selling price does not increase the total consumption. You probably know that if you were to cut the price in half, the final consumer of paper would not use appreciably more. He might use a little more, but very little. Therefore, every ton of paper that is forced on the market in excess of what the market can take, simply puts off that much longer the time when you will strike a reasonable balance between supply and demand, and when prices can come back to a profitable basis.

The man who insists on trying to run 100 per cent full when the market will not take the production is not only hurting himself immediately, selling at no profit and usually at a loss, but is hurting himself also in the future, and is hurting the industry, because every ton that he puts out in excess of requirements delays that much longer the time when he and any of the other mills can run at a profit.

Set Up a "Complete" Budget and Work for Profits

Now, a knowledge of what you can do under those circumstances depends absolutely on proper costs, and depends upon lining up a reasonable budget. One of the most important factors tending toward increased net profits under present conditions is the setting up of a complete budget that will take in not only the manufacturing costs but selling and administrative costs, and will compare the sales, on what can reasonably be expected under present conditions, with the costs that will be matched up with that sales program, the costs including not only the manufacturing but the selling and administrative costs.

There is no reason why, in the paper industry, you cannot work out what has been worked out in a few paper mills and in many mills in other industries; that is, a complete budget plan that will give the executives full control over the business, and, what is more important, give this control in advance. Under business conditions that are not satisfactory, by lining up a proper budget it is possible to determine in advance what the net profit will be at the end of the year, and those who have operated budgets for a number of years find they can come out very close to the estimate. The advantage is that if the net profit, as thus determined, is unsatisfactory, the executives can take steps in advance to try to improve it, either through increased sales, or if they feel it is not possible under reasonably expected circumstances to increase those sales, to find ways and means of cutting down either the manufacturing costs or the costs of distribution.

It may be that, after everything is worked out, it is not possible to develop more than a very small net profit under present conditions, but knowing in advance what can reasonably be expected, as shown by the budget carefully worked out after consultation with your manufacturing and selling and financial men, you then are in a position to see just how bad or good it is, and, if it is bad, take steps to correct it. I believe, under present conditions, the one single factor that will count most in the paper industry and in individual mills will be the development of a complete budget, that each mill knows in advance just exactly where it stands and where it is going.

We have developed in the paper industry, through the Cost Association, a pre-determined or budget cost system, but that has been applied in the past largely to the manufacturing costs, so that what I am suggesting as a complete budget simply means extension to the selling and administrative expenses and the financial items, so that you will have, for the benefit of the executives, a complete control over the whole business, in addition to the control of manufacturing, which every executive has, who is operating a cost system on the basis that has been made standard by the Cost Association.

Budget System Improvement on "Lot" Cost System

The original plan for costs in the paper industry, and that developed in many mills has been on a lot cost basis, and that was, at the time it was developed, a very satisfactory plan. It is still very satisfactory today in many mills, but I would suggest that there are advantages through operating a plan of schedules or pre-determined costs by grades, weights, color, etc., rather than the lot cost method. The advantage of scheduled costs under present conditions are that the figures can be obtained more quickly, the plan is somewhat less costly to operate, and the executives have a closer, quicker, and therefore better control of the business. That control obviously can be used as an aid toward greater net profits.

Profits Figured as Percentage of "Conversion" Costs

After the cost has been determined, there is a question as to the basis for adding profit. The basis used by many mills has been as a percentage either of the dollars and cents costs, or dollars and cents selling price. In some other mills it has been an average figure per pound of paper. I suggest that, in figuring closely, we should think of the profit item to be added to the cost as determined, as a percentage of the conversion costs. That will give you the same return on your investment, and the same return on the labor and expense involved in making one grade or one weight or size of paper as compared with another, assuming the mill makes more than one product.

Salesmen's Commissions Based on Profits They Make

There is another point to which the executives might well give attention under present conditions, and that is the basis for compensating salesmen. The basis used by many, if not most of the mills, is a commission based directly on the sales. That is, sales of a thousand dollars will yield so much commission. I suggest that a great deal can be gained by a study of a proper basis for salesmen's compensation, which will

[1]Address delivered at luncheon meeting of Cost Association of the Paper Industry, at Waldorf-Astoria Hotel, New York City, February 22, 1928.

put each salesman somewhat on his own feet, and give him a share of the net profit in the paper that he is able to sell.

In working out such a plan it is necessary, first, to determine the proper manufacturing cost, and therefore gross profit, on the various items. Then in addition, the selling and administrative expenses, (other than the compensation and expenses of the salesmen themselves), should be properly allocated to the various classes and kinds of sales and deducted from the gross profit, leaving a net figure available for profit and salesmen's compensation. Then the company can well afford to give each salesman a substantial share of that remaining figure. Such a plan is far more satisfactory than any payment as a straight commission per dollar of sales or per pound, or on any other unit basis, because the salesman is working for the best interests of the company, and he has a direct interest in the net profits and will naturally push the profitable lines. A plan such as I am suggesting cannot be developed on any flat average basis. You must take into consideration the territory a man is covering, reasonable quotas must be worked out for each territory, and it is usually desirable to develop a sliding scale,—one basis for 100 per cent of the quota, a different basis for 90 per cent, and still a different basis for 80 per cent. A study of the costs of selling and distribution, the bulk of which is salesmen's salaries and expenses, will well repay the executives in any mill under present business conditions.

Steam and Power Costs Given Insufficient Attention

There are a few specific points of attack that I would suggest the executives might look into for an increase in net profits. One is the cost of steam and power. I was very glad to note that you have a session on that subject this afternoon, because in my opinion, the element of steam and power cost in paper mills has been given much less attention by the executives than it deserves.

Some years ago we visited a number of mills, between twenty and twenty-five, in the same section of the paper industry, and developed actual cost figures on a uniform basis for all those mills. I was very much surprised to find, when those figures were actually worked out, that the cost of water, steam and power, represented about one-third of the total conversion cost, and yet I didn't find in any of those mills that problems in connection with water, steam and power, were given anywhere near the attention that they deserved. Instead of being given one-third of the attention, as representing one-third of the total conversion cost, they were not being given one-tenth or one-twentieth of the attention given to other items.

We have made certain detailed studies, and other engineers have made studies of water, steam and power conditions in paper mills, and found some alarming facts. Dryer rolls on the paper machines were half full of water, live steam was being used unnecessarily or allowed to escape from various places around the plant, the boiler efficiency was very low, and there was no reasonable balance between steam generation and consumption. Such wastes have been going on for years, and nobody has paid much attention to them, because they have never been reduced to a dollar and cents basis. The executives have never realized what the dollars and cents possible saving was, and the foremen in the various departments, machine tenders and others, have never had brought home to them the fact that what they were doing was costing the company $10.00 a day, or $100 a week or any other definite amount of money.

There is one further suggestion. In purchasing coal there is a great deal of attention paid to the price, and yet, when we consider that about half the total cost of coal in the average case is freight, obviously if you can buy a slightly better grade of coal the cost per heat unit will be much less because you have to pay the same freight on "slate" that you do on real good coal. This merely illustrates the importance of looking at such matters from the angle of final net dollars and cents.

Reduction of Waste in Finishing Operations

Another specific point brought to my attention in the last few years has been the very large waste in the finishing operations of some mills. By having figures as to what was reasonable and what other mills were accomplishing under similar circumstances, I have been able to suggest to the executives of the paper mills where the waste looked big, that there was an item that would bear looking into. In practically every paper mill if the men in the finishing department were made to realize that one hundred pounds of paper represented so much money and must be handled carefully, whether in the rolls or sheets, much could be accomplished. In one case where we called the large finishing waste to the attention of the executives, they began to check it up and almost immediately reduced the loss one-quarter. That one-quarter deduction means a great many thousands of dollars in a year. The savings required no new equipment. It was simply greater care in handling the finished paper, and letting the men in the finishing department know the waste was being checked, that it was too great and must be cut down.

Summary of Items Worthy of Executive Attention

To increase net profits, the big items for the executives to consider under present conditions, are: (1) set up a complete budget, what can reasonably be expected, and then watch the actual results in comparison with the budget; (2) refuse to sell below cost on the basis of the budget as worked out; (3) develop a plan for compensating salesmen on the basis of net profits from their efforts; and (4) use the operating figures to find points of attack for reducing costs.

It is not sufficient merely to take past performances in your own mill but get figures from other mills. Have your cost men consult with cost men of other mills and get some real information as to what other people are doing, and see whether your past performances are reasonable or are not. Where your figures are in excess of others, see if it is not possible to bring your own costs on those particular items down to a reasonable average.

Net Profits Can Be Increased by Careful Study of Cost Figures

I find that the executives will pay attention to dollars and cents figures, but they are not very much interested in forms or methods. We have to know about forms, and methods in order to get the results which we can present to the executives. We should present facts to the executives in the form of dollars and cents. For instance, "Here is what we are doing and here is what other people are doing." Or, "I believe this item should be investigated further because I think a saving can be made." Study and use of the cost figures in that way will help toward net profits, or increase the net profits under present conditions.

The executives should get reports and study the variations from the budget which has been carefully worked out, and determine what points of attack seem most worth while to reduce costs. These points of attack may be such items as I have mentioned—water, steam and power cost, a study of finishing waste, a study of reducing selling and distribution costs. Those are obviously not all the items or elements that executives should consider in the present business situation, but I believe they are suggestions which you can take home, and see if they apply to your particular business. You may find one of more of them will do so, in which case this convention will have been of value to you and your company.

The Lincoln Electric Co. of Cleveland announces the appointment of Jacob F. Savela as welding service manager for the Detroit district under the direction of J. M. Robinson, district sales manager. Mr. Savela is a graduate of the University of Michigan and has had a wide practical experience.

The D. O. James Mfg. Co., Chicago, makers of speed reducers and cut gearing, announce that R. C. Bird, formerly with the Chain Belt Co., Milwaukee, will be connected with their company in the capacity of traveling sales manager. Mr. Bird has spent some twenty years working with power transmission equipment and will be available to all interested in securing speed reducers for specialized jobs.

Effect of Residual Acid on Rate of Deterioration of Paper*

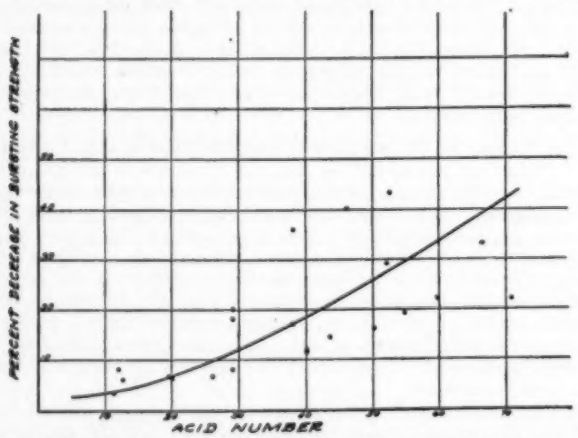
By W. F. HOFFMAN

THE Swedish Government Testing Institute has carried out a large series of tests on the rate of deterioration of paper. In this work the permanency of the paper has been measured by the folding endurance. This work has been reported by Hall, who has reviewed the factors on which the durability of paper depends.

In these tests, the acid number is used to measure the acidity of the paper. The relation of the acid number to the copper number and to the folding durability of the paper was studied. From a series of tests on papers of different types and from different manufacturers, he points out that rosin sizing increases the acidity which causes a deterioration of the paper greater than that of the unsized paper, but that the deterioration of the paper caused by rosin size is not so great, but that rosin sizing can be used for paper requiring a high permanency, provided that the sizing be carried out without the use of an excess of aluminum sulphate. In recommending the conditions for manufacturing a paper which will not deteriorate, he states, "If rosin sizing is applied, the amount of rosin should be kept down to a minimum and not more aluminum sulphate than about 0.8% to each per cent of rosin be used."

The Acid Number

The internal acidity of the paper should be controlled and must not exceed about 20, determined according to the method



Graph 1—The percentage decrease in bursting strength of the paper heated at 85 degrees C. for 72 hours plotted against the acid number of the paper.

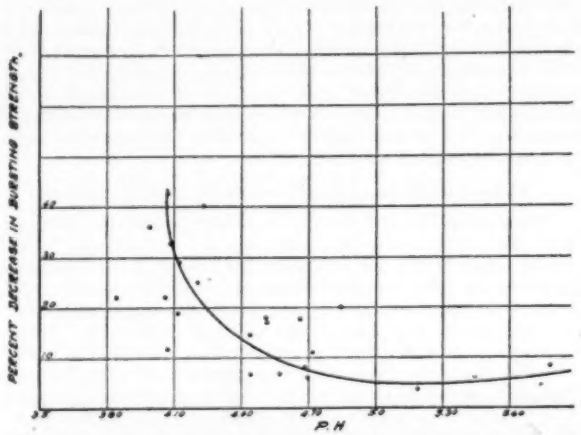
worked out by the Swedish Government Testing Institute. The acidity of the paper referred to by Hall is the acid number is the total number of cubic centimeters of 0.01 N sodium hydroxide required to neutralize to phenolphthalein, the acid extracted from the paper calculate to a 10 gram sample. The procedure is given in detail by Taylor and Hall.[2] They point out that the acidity of engine sized paper is due mainly to the rosin precipitant, usually alum. This, they have taken as internal acidity and of tub sized paper as external acidity, which is due to the aluminum sulphate used to preserve the glue. The external acidity is supposed to be practically harmless as regarding the permanency or durability of paper, while the internal acidity may affect the permanency or durability very markedly. In this paper internal acidity alone is dealt with, as engine sized papers only were used.

The fact that acid left in the paper causes a decrease in strength of the paper has been observed by others.[3] From this we learn that if a paper finish requires a large amount of alum the resulting paper will change, that is decrease in bursting and tensile strength more rapidly than a paper made with less alum. When a paper is made requiring a high tensile and bursting strength after passing over the driers the amount of residual acid should be kept to a minimum.

The Copper Number

The copper number of a paper has also been used in studying the resistance of paper to deterioration. It is a measure of the impure forms of cellulose present which tend to weaken the paper. The deterioration of the copper number is a rather long and complicated process especially for mill control work. However, in the manufacture of very high grade paper, this determination is of value as the copper number of the finished paper measures the relative purity of the cellulose used.

The studies made at The Swedish Government Testing Institute show that the copper number of a paper and its acid



Graph 2—The percentage decrease in bursting strength of part of the samples of paper heated at 85 degrees C. for 24 hours plotted against the acid number of the paper.

number are closely related. When papers are aged by heat, those having a high acid number deteriorate rapidly. This deterioration was accompanied by a corresponding increase in the copper number.

Both the copper number and acid number determinations are made of the finished paper, and, therefore, it is some time after the paper is made before tests can be completed. Thus, they do not readily lend themselves to routine control work. The determination of the hydrogen ion concentration of a solution can be made in a very short time, so if the hydrogen ion concentration can be correlated with the acid number of the paper a more rapid method of measuring the acidity of the paper is available.

Effect of Acidity on Paper Durability

An attempt was made to ascertain quantitatively, if possible, what the effect of acidity, both total and active, had on the permanency or durability of paper as measured by the bursting strength. This bursting strength was measured by means of the Mullen tester, which is generally used in measuring the pop or bursting strength of paper. The total acidity is the titratable acidity or total acid content, and the active acidity represents the hydrogen ion concentration and is expressed in terms of pH.

For this series of tests, commercial papers, wrapper, envelope and label, were selected from various sources. Some of these were known to be manufactured for one reason or another with a large excess of alum, which would result in a high acid value in the paper. The white water coming from the machine was about pH 4.0 or less. Others were known to have been made with no excess of alum, the white water coming from the machine being almost neutral, about pH 6.0. Samples of these papers were tested for strength and heated for definite intervals in a steam heated oven at approximately

*Paper Number 3 from the Chemical Laboratory of The Northwest Paper Company, Cloquet, Minn. Presented at 13th annual meeting of T. A. P. P. I.
[1]Hall—Paper Trade J. 82, 52-58, 1926; Tech. Assoc. Papers 9, 90-98, 1926.
[2]Tayolr and Hall—Paper Industry 7, 1059-1063, 1925.
[3]Tech. Assoc. Papers 9, No. 2, p. 27, 1926.

85 degrees C., removed, and tested after coming to an equilibrium with the room temperature and humidity. After testing the samples they were replaced in the oven for further heating. In the majority of cases, the maximum deterioration was reached in about 72 hours. The results are shown in Tables I and II.

Analytical Methods

The acid number was determined, as described by Taylor and Hall.[2] The paper was shredded for the determination of the acid number and for the determination of the hydrogen ion concentration. For determining the acid number a 5 gram sample was placed in a 500 cc. erlenmeyer flask, 250 cc. of boiling water added in small portions with vigorous shakings between each portion to insure proper soaking of the paper.

TABLE 1

Decrease in Bursting Strength, the Acid Number and the pH of the Paper Samples After Heating for 72 Hours at 85 Degrees C.

Sample Number	Original bursting strength	Bursting strength after heating	Difference in bursting strength Points	Difference in bursting strength Per cent	Acid number	pH
4	33	27	6	18	28.8	4.56
7	43	38	5	12	40.0	4.08
10	44	26	18	40	46.0	4.23
12	36	30	6	16	50.0	4.49
15	29	23	6	20	29.0	4.86
20	48	40	8	17	37.8	4.65
24	35	31	4	11	40.4	4.72
26	50	52	2	4	8.6	5.77
51	68	51	17	25	45.0	4.19
52	49	38	11	22	59.6	4.02
53	24	17	7	29	51.6	4.12
54	53	42	11	19	54.6	4.11
55	28	26	2	7	28.8	4.67
56	73	47	26	36	38.4	4.01
57	59	51	8	14	44.0	4.46
58	30	17	13	43	52.4	4.06
59	21	14	7	33	65.6	4.09
60	41	32	9	22	70.6	3.84
61	51	48	3	6	12.4	5.44
63	26	24	2	8	12.0	5.80
65	44	41	3	7	26.8	4.46
66	18	17	1	6	20.8	4.69
67	14	13	1	7	20.8	4.56
69	56	54	2	4	11.6	5.23

Table 2

The Decrease in Bursting Strength, the Acid Number and the pH of the Paper Samples After Heating for 24 Hours at 85 Degrees C.

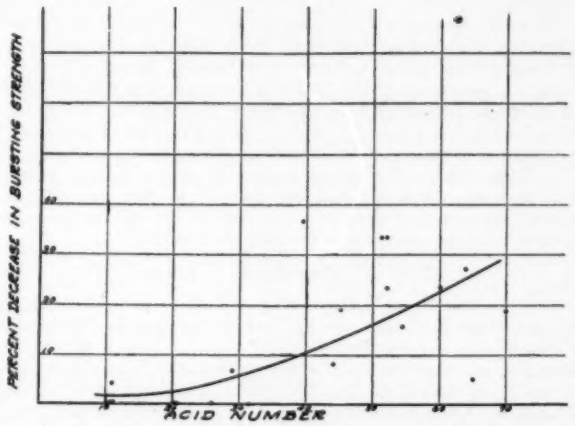
Sample Number	Original bursting strength	Bursting strength after heating	Difference in bursting strength Points	Difference in bursting strength Per cent	Acid number	pH
51	68	58	13	19	45.0	4.19
52	49	37	12	25	59.6	4.02
53	24	18	6	25	51.6	4.12
54	53	45	8	15	54.6	4.11
55	28	26	2	7	28.8	4.67
56	73	53	20	37	38.4	4.01
57	59	54	5	8	44.0	4.46
58	30	20	10	33	52.4	4.06
59	21	20	1	5	65.6	4.09
60	41	33	8	19	70.6	3.84
61	51	51	0	0	12.4	5.44
63	26	25	1	4	12.0	5.80
65	44	44	0	0	26.8	4.46
66	18	19	+ 1	+ 6	20.8	4.69
67	14	14	0	0	20.8	4.56
69	56	56	0	0	11.6	5.23

This was heated for one hour on a steam bath with a reflux air condenser, after which the water was removed from the paper with strong suction and the mat washed with 10 cc. of cold water. The pulp was then returned to the flask and the extraction repeated twice. The filtrate was cooled to room temperature and each fraction titrated separately with 0.01 N sodium hydroxide with phenolphthalein as the indicator. The pH of the paper was determined by placing 250 cc. of water and 5 grams of the shredded paper in a 500 cc. erlenmeyer flask, care being taken, as noted above, to insure proper wetting of the paper and then boiled for one hour. The mixture was filtered, the filtrate cooled to room temperature and the hydrogen ion concentration determined electrometrically using a hydrogen electrode. This, of course, is entirely an arbitrary procedure, and probably does not give the actual pH value in the essentially dry paper, but due to the great buffer value of the weak acid present in the paper the hydrogen ion concentration, as determined, is probably not far from correct. The reason for using this ratio of water to paper is that it approaches the concentration of the stock going on to the paper machine.

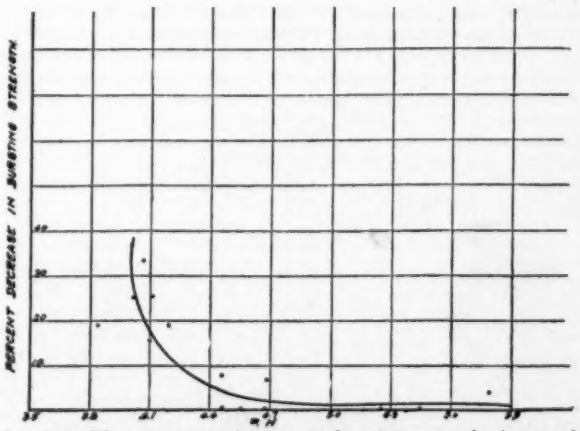
Results Obtained

Table I shows the values for the acid number and the pH of the various samples of paper, together with the loss in strength when the paper was heated for approximately 72 hours at 85 degrees C.

Table II shows the value of the acid number and the pH of part of the samples of paper, together with the decrease in bursting strength when the samples were heated for 24 hours at 85 degrees C. Graph 1 shows the percentage decrease in bursting strength of the paper heated at 85 degrees C. for 72 hours plotted against the acid number of the paper. Graph 2 shows the percentage decrease in the bursting strength of part of the samples of paper heated at 85 degrees C. for 24 hours plotted against the acid number of the paper. The percentage decrease in bursting strength of the various samples of paper heated at 85 degrees C. for 72 hours is plotted (Graph 3) against the pH of the paper. The percentage decrease in bursting strength of part of the samples of paper heated at 85



Graph 3—The percentage decrease in bursting strength of the paper heated at 85 degrees C. for 72 hours is plotted against the pH of the paper.



Graph 4—The percentage decrease in bursting strength of part of the samples of paper heated at 85 degrees C. for 24 hours plotted against the pH of the paper.

degrees C. for 24 hours is plotted (Graph 4) against the pH of the paper. These data indicate that the permanency or durability of the paper when measured by the bursting strength, and heated for some time at 85 degrees C. decreases as the acid content of the paper decreases.

Discussion of Results

It is impossible to draw any definite conclusions from any one determination, but when the samples are all taken into consideration the papers containing the larger amounts of acid deteriorate more rapidly under the conditions of these experiments. It is evident, however, that there appears to be a definite relation between the acid number and hydrogen ion concentration and the rate of deterioration of the paper. In a study of these data, it must be kept in mind that three different types of paper have been used, and these manufactured at various mills. There is not a definite relationship between the acid number and the hydrogen ion concentration of the paper as they do not necessarily measure the same thing, but, in general, the hydrogen ion concentration increases as does the acid number.

When the hydrogen ion concentration of the paper, as determined by the method described above, does not exceed that represented by pH 4.5, there is very little deterioration of paper as measured by the bursting strength when heated for 24 hours at 85 degrees C., as shown in Graph 4. However, when heated for a longer period of time (Graph 3) there is an appreciable decrease of the bursting strength up to about pH 4.7. These results further show that if the rosin sized paper is to be made which will not decrease in bursting strength on ageing, an excess of alum must be avoided, or the excess acid formed must be neutralized by suitable means.

Effect of Using Excess of Alum

The effect of using a large excess of alum in the beater is well illustrated in the case of four of the samples of paper whose manufacturing history was known. Samples 65 and 69 were run on the machine at a time when the white water had an acidity of less than that equivalent to pH 6.0, and both of these papers deteriorated but slightly on heating in the oven. In both cases no excess of alum was used. In contrast to these papers, samples 56 and 58, were run on the machine when a large excess of alum was used in the beater and the white water had an acidity greater than that equivalent to pH 4.0. These two samples of paper lost 36 per cent and 47 per cent respectively of their original bursting strength on heating in the oven for approximately 72 hours. These data again show that a strong paper whose bursting strength will not decrease on ageing must have an acidity less than pH 4.5, as determined by the method described above, which corresponds to approximately pH 5.0 for the acidity of the white water. This method of ageing in an oven at an elevated temperature gives results comparable to a longer ageing period at room temperature. Samples of paper similar to 65 and 69 have been ageing in the laboratory for several months with no appreciable loss in bursting strength, while, under the same conditions, samples similar to 56 and 58 deteriorated as much as 50 per cent in bursting strength in two or three months.

Summary

There have been two methods suggested for determining the probable resistance of a paper to deterioration. These are the copper number and the acid number. Both determinations require samples of the finished paper. If the deterioration of the paper together with an increase in the copper number is caused principally by an excess of acid in the finished paper then a measure of the acidity of the white water coming from the paper machine should indicate the probable resistance of that paper to deterioration.

The effect of controlling the hydrogen ion concentration of paper stock during the manufacture of the paper within the limits noted above, on the sizing and color of the finished paper are being studied.

The deterioration or aging of a series of papers as measured by the bursting strength has been determined. It was found that the higher the acid number, and the higher the hydrogen ion concentration, the greater, in general, was the decrease of the bursting strength of the paper. If the acid number of paper is below about 25, as measured by the Swedish Government Testing Institute's method, the paper does not decrease appreciably in bursting strength when heated at 85 degrees C. for periods as long as 72 hours. If the hydrogen ion concentration is less than that represented by about pH 4.5, as determined in these tests, there is no appreciable loss in bursting strength of the paper except when they are heated at 85 degrees C. for more than 24 hours. When heated for a longer period the hydrogen ion concentration should be less than that represented by about pH 4.7, to prevent deterioration due to acid.

Monosulphite Recovery Problem Solved

Stream Pollution Avoided by New Process

ONE great drawback to the use of sodium monosulphite in the pulping either of wood or cereal straws has been the difficulty heretofore of the recovery and reuse of chemicals in the spent liquors. In a new process which is the invention of Dr. Viggo Drewsen, of Larchmont, N. Y., and on which patent No. 1,659,193 was granted by the United States Patent Office, February 14, 1928, this has apparently been overcome. The patent is owned by the West Virginia Pulp and Paper Company, of New York, through an assignment by Dr. Drewsen. The recovery system may be applied to the spent liquors from any alkali monosulphite or bisulphite process, but is particularly adapted for use in the recovery of spent alkali sulphite liquors in the manufacture of paper pulp, a matter of supreme importance in view of the present agitation against stream pollution by pulp and paper mills. In Drewsen's new process nothing is wasted and there is consequently no effluent from the mill to pollute watercourses.

The novel principle on which the patent is based, is the production and subsequent conversion, in process, of sodium thiosulphate to sodium monosulphite in the presence of caustic soda and air. The specifications note three stages in manufacture as follows:

"Sodium sulphide (Na_2S) when exposed to air containing carbon dioxide tends to break down in time into sodium thiosulphate and sodium carbonate. But in the presence of carbonic-acid-free air it is gradually changed to sodium thiosulphate and caustic soda, according to the following equation:

"(1) $2NaS+4O+H_2O=Na_2S_2O_3+2NaOH$

"This reaction takes place rapidly, I have found, if the sodium sulphide be given great surface for treatment by mixing it in the presence of carbonic-acid-free air with porous solid materials such as charcoal, coke, pumice, stone powder, etc. Moreover, enlarging the surface by mixing the sodium sulphide in the presence of such air with crystalline or amorphous bodies, such as soda ash, sodium sulphite (anhydrous), clay, calcium carbonate, magnesium carbonate, also causes the reaction to take place rapidly. The reaction is exothermic and temperature tends to rise and the speed of reaction to accelerate. By keeping the temperature at 120° C. or lower, however, it is possible to control the reaction so that in a reasonable time the sulphide has disappeared and been converted into thiosulphate, according to the foregoing equations, as can be proved by testing the product. If the temperature of the mixture be then raised to about 140° C., another reaction occurs, whereby the sodium thiosulphate and caustic soda produced in the first step react to form sodium monosulphite and sodium sulphide, according to the following equation:

"(II) $3Na_2S_2O_3+6NaOH=4Na_2SO_3+2Na_2S+3H_2O$

"It will be noted that two-thirds of the sodium is present as monosulphite and one-third as sulphide. By adding a small amount of water, the sodium sulphide goes into solution, whereas the sodium sulphite remains insoluble in the solution of sodium sulphide and may be filtered off as anhydrous Na_2SO_3. By simple filtration, I have recovered 93 per cent of the theoretical amount of sodium sulphite, practically free from sodium sulphide.

"The mother liquor of sodium sulphide may be concentrated

by evaporation, and used again in the process of Equation (I).

"However, with care, I have found that it is also possible at a temperature around 100° C. with aeration in the presence of a surface giving material to transform the mixture of thiosulphate and caustic soda directly into monosulphite according to the following equation:

"(III) $Na_2S_2O_3+2NaOH+O_2=2Na_2SO_3+H_2O$

"In the practical use of my process, I have found it possible and convenient to carry on the reaction of Equations (I), (II) and (III) simultaneously, although if desired for special purposes they may be separated as above indicated by properly controlling the temperature and aeration. Thus, in general, if a sodium sulphide be mixed with a surface-giving body and agitated in the presence of carbonic-acid-free air while gently heated, the reaction sets in according to Equation (I) and proceeds according to Equations (II) and (III) until finally all the sodium sulphide is converted into sodium sulphite. Practically no sulphate is formed, especially if the temperature be controlled so as not to rise too high. The temperatures used may vary considerably, but in practice I have found that good results may be obtained by maintaining a temperature in the neighborhood of 140° C. throughout the reaction.

"As applied to the recovery of spent sodium sulphite liquors, the process may be conducted substantially as follows:

"The liquor is first neutralized in the case of bisulphite spent liquors. In the case of monosulphite spent liquors, neutralization is not needed. The liquor is then concentrated and burned in a reducing flame. An intermediate step of drying for the recovery of by-products may be used if desired, or the organic matters may be burned directly. The heat generated by so burning the spent liquors is very great and can be economically employed to save fuel costs. The residue of the burning is mainly fused sodium sulphide (i. e., usually upwards of 50 per cent Na_2S, the balance being chiefly sodium carbonate and other impurities which do not interfere with the further steps hereinafter described). This residue is continuously run from the furnace into a tank of water and agitated therein to form a hot solution of sodium sulphide. This may be as strong or stronger than the crystallized sodium sulphide of trade (Na_2S, $9H_2O$) which is liquid at about 50° C. and can be readily pumped at the temperatures employed in this process as hereinafter described.

"The hot sodium sulphide solution—which may carry along the sodium carbonate and other impurities in the burned residue—is run into a closed mixing machine adapted for the mixing of powdery materials, of which many types are available on the market—for instance, the well-known Werner and Pfleiderer mixing machine. In the mixing machine, the fused sodium sulphide is brought into contact with a mass of powdered solid sodium monosulphite and subjected to a draft of air. The temperature of the mixing tank is maintained in the neighborhood of 140° C. The hot sodium sulphide solution is rapidly dried and solidifies as it comes in contact with the sodium monosulphite and the air blast under these conditions, the water escaping as steam. Then as the agitation and aeration of the mixture continues, a surface action is brought about whereby the air oxidizes the sulphide and eventually converts it into sodium monosulphite by means of the series of chemical reactions herein described. The process is advantageously conducted continuously, the hot solution being continuously pumped into the mixing machine and the treated product being allowed to overflow out of it. If a single mixing machine be used, the size of the mixing machine and volume of air supplied must be sufficient relative to the rate of delivery of the hot solution to permit of substantial completion of the reaction as the material passes through the machine. It is advantageous to use a series of mixing machines, the hot solution being continuously pumped into the first of the series and the partially treated solid powdered product overflowing into succeeding tanks of the series until the reaction is completed.

"The presence of impurities, such as carbon, calcium carbonate, sodium carbonate, etc., in the original hot sodium sulphide solution does not interfere with the process, since such impurities merely help to promote the surface action and oxidation of the sodium sulphide. It is not even necessary to free the air for aeration in the process from carbon dioxide. Such air normally contains 4 liter CO_2 to 10,000 liter air. The amount is too small to do any harm to the reaction if the air supply is regulated.

"If pure sodium monosulphite is desired, the crude monosulphite is dissolved in water and filtered or settled, and the clear solution concentrated. As the concentration proceeds, pure sodium monosulphite is precipitated as an anhydrous salt.

"The crude sodium monosulphite resulting from the process dissolved in water with the insoluble impurities filtered or settled out is, however, suitable for use as a cooking liquor without special concentration and purification.

"If bisulphite is desired, it is merely necessary to treat the monosulphite solution with sulphur dioxide gas till the bisulphite is produced."

Silicate of Soda—Its Use in the Paper Mill[1]

By JAMES G. VAIL

Philadelphia Quartz Company

CHEMICAL engineers frequently speak of unit processes—those steps in the handling of materials which are common, with but slight variations, to several industries. Drying, filtration, distillation and others that could be mentioned are subject to the same fundamental laws, whether applied in a soap factory, a textile mill, or one that is devoted to the making of paper. Thus the experience of one industry becomes available to another. This sharing of experience is one of the mean characteristics of recent times by which we make progress in the respective industries in which we are engaged.

In an analogous sense, it may be said that silicates of soda are unit materials. Brick or concrete are perhaps more common, yet in every industrial plant there is at least one place where a suitable grade of silicate, rightly applied will render useful service. The catalogue is long, much too long to recite completely within the scope of such a paper as this, but let us consider first some of the uses of more general application and then, somewhat more particularly, the uses peculiar to the paper industry.

It is usually most helpful to view a process in terms of the reactions which take place, the interplay of the smallest units, even when we cannot explain them completely. We are more likely to be able to build a satisfactory wall by considering the characteristics and fitting together of the individual bricks and mortar than we are by contemplating the structure in outline, as it were, without due attention to the qualities of the individual unit, each of which makes its contribution to the final results.

The Familiar Use in Preserving Eggs

One characteristic of silicate solutions is their ability to form hard resistant jelly-like masses when they come in contact with substances able to combine with the alkali and set silica free. An example of this is the familiar method of preserving eggs by keeping them immersed in a dilute solution of silicate of soda. The lime in the egg shell causes the silica to deposit in the form of a very stiff, hard jelly which fills the pores of the shell. This jelly effects the preservation of the egg by preventing the passage of bacteria from the outside to the inside of the shell. The shell is naturally porous and the bacteria are the usual cause of decay. The gel effectively shuts them out as long as the eggs are kept under the solution and thus prevented from drying out. In order to obtain the best results, it is necessary to select that form of silicate and that degree of concentration which gives a gel of the texture required. Now silicate solutions differ in the amount of soda and silica which they contain, and it does not follow that because one silicate gives exactly the desired results that the same will be true of every

[1]Presented at the meeting of the Southeastern Division of the American Pulp and Paper Mill Superintendents' Association, at Lynchburg, Va., March 16, 1928.

other. Let us then think of the name silicate of soda as a generic name including a group of materials which differ among themselves at least as much as the various kinds of starch or clay. Some of them are suited to the needs of the paper industry, while others have their place or usefulness in an entirely different field.

Hardening Concrete

Hard jellies are best obtained from silicate solutions with a relatively small quantity of soda, and the same process which is useful for preserving eggs is also a valuable means of hardening concrete. After a cement floor has well set, it consists of a hard, finely porous structure comparable in several respects with the egg shell. The best concrete will gradually wear under the forces of abrasion incident to moving materials about a factory. Even foot traffic will often cause enough wear on the concrete to raise a dust which is a nuisance, for it damages machinery and paper as well as the floor. A dilute silicate solution containing a high proportion of silica will, when it is spread upon the dry, finished floor, be absorbed into the pores and deposit there a hard jelly which increases the resistance of concrete to abrasion. The treatment is inexpensive, the principal cost being the labor of saturating the floor with the help of squeegee or mop. The denser the concrete the more dilute should be the solution. The idea is to get it to penetrate as fully as possible, and to repeat the treatment two or three times allowing the floor to dry between the applications until the pores are thoroughly saturated. Not only laboratory tests, but practical experience shows that this method invariably increases the ability of the concrete to withstand wear. Its porosity toward water or oils is also decreased. Test blocks of concrete rubbed with steel blocks, with sand continually fed to the rubbing surface, show many times as much wear on untreated portions as on those saturated with silicate. Similar results are secured by measuring the penetration caused by a sand blast under standard conditions and the advantage of silicate is clearly apparent for any age of concrete after the initial set. In practice this means that old floors as well as new may be successfully treated, provided only that they are free from grease which may interfere with the penetration of the silicate. On floors having the hardest service it is some times advisable to repeat the treatment annually. Freedom from dust, quite aside from the life of the floor, is an object worth some effort. Around a paper machine where the floor is continually wet, increased wear may be secured by saturating with a dilute silicate during down periods. The concrete should be dry when silicate is put on, as otherwise the water in the pores will interfere with the entry of the silicate.

Patches on concrete floors will help to take firm hold of old work by undercutting, thoroughly cleaning the freshly exposed surfaces of old concrete and painting them with silicate before putting the new work in place. In both of these instances, satisfactory results may be had from using "A-Syrup" which is used by many mills in the beater.

Silicate and Portland cement should not be integrally mixed before the setting, except in a few special cases. One of these is when a very quick set is required as in stopping a leak where the ultimate strength of the concrete is not a matter of first importance. Silicate greatly hastens the setting of Portland cement and is detrimental to its ultimate strength. Other mixtures in which silicate solutions and Portland cement are used are some of the quick setting formulae for placing acid resisting brick in sulphite pulp digesters. Here the formula usually requires the mixing of very small batches so that only a few brick are laid with one mixture. For this purpose, a somewhat more alkaline silicate such as "U" Brand has been found to be most satisfactory.

Adhesive Uses of Silicate

Adhesive uses of silicate solutions are very many. The most important in connection with the paper industry are the making of corrugated and solid combined board for fiber shipping containers and for wall board. In the paper mill proper the capping of rolls and the sealing of packages containing cut sheets of paper, while they are not the most important operations of the mill, must, nevertheless, be done right or a great deal of dissatisfaction will result. "Seal" Brand, which is intermediate in alkalinity between the grades suitable for use in the beater and that recommended for cement mixtures, is the most satisfactory for hand application where a firm set is required. Silicate is also used for splicing and does the work economically, though it must be said that the ideal material for this purpose would be one which is entirely free from water. The strength of silicate adhesives is enormously greater than the strength of paper. "Seal" Brand silicate will adhesively unite surfaces to withstand a pull above five hundred pounds to the square inch. It does this economically, and has a great reserve for any use on paper, where fifty pounds to the square inch would give a good margin of safety. Silicate also has the advantage of being a mineral product incapable of becoming rancid or moldy.

An Aid to Hydration

An important characteristic of silicate solutions is their ability to wet surfaces. This is one of the reasons they are used in laundries. The first step in washing is to thoroughly wet the fabrics to be cleansed, and silicate, even though dilute, is much more effective than water alone. It can even wet oily surfaces. Similarly in the beater, the more quickly and thoroughly the pulp is penetrated by water, the more easily may the individual fibers be separated by mechanical means; the shorter may be the beating operation. Silicate can thus increase beater capacity.

The capacity of clay mixing equipment also can be increased by using small amounts of silicate. Such additions render clay suspensions so much more fluid that it is often possible to double the amount of clay carried by a given quantity of water. The pottery industry makes daily use of this property.

Silicate in the Beater

Much has been said about silicate sizing of paper, and while a good deal remains to be learned, there are some points which have been made clear by experience and research of recent years, for they enable the paper maker to understand the means by which he may employ silicate solutions to obtain qualities which he needs in a particular sheet of paper. It has long been known that silicate is in many ways analogous to rosin size, but the analogy is not complete. Both silicate and rosin size are alkaline liquids in which soda is combined with a material of weakly acid nature. Both may be precipitated with alum, yielding materials retained in the paper, and in both cases the texture of the precipitate is affected by the conditions of precipitation, i. e., the amount of water present, the amount of alum used, and the relation of the silicate or rosin size to the amount of pulp in the beater. No paper maker would expect to get a uniform distribution of rosin by mixing it with alum before it was well diluted in the beater. The same is true of silicate. Gritty non-uniform products result from precipitates formed in strong solutions, but with the amount of water ordinarily used in the beater, the soft precipitate settles slowly like a snowstorm. Voluminous, flocculent masses are distributed among the fibers where they help to prevent the escape of the smallest fibers and, when rightly used, to improve the retention of clay or other fillers. There is no more risk of affecting the color of paper with silicate than with rosin size. With the proper manipulation of alum the most sensitive colors can be employed. The silicate precipitate hardens and loses water as the paper progresses through the machine. The effect is nearly always seen in a smoother surface and a harder sheet.

The conditions of making paper and the objects sought are so various that it is difficult to make general statements. The purpose of this presentation is to indicate a method which has various uses according to the final result which is required. The makers of greaseproof and glassine paper will be specially interested in silicate as an aid to hydration. For this purpose the longest possible interval should be allowed between introducing the silicate and neutralizing it with alum. Silicate in alkaline condition accelerates hydration, but in every case a sufficient amount of alum should be

used before the beater is dumped. On account of different waters, different fibers and other variations this cannot be specified absolutely to fit all cases. The modern method of measuring chemical pressure comparable to measuring voltage in an electric circuit, or pounds per square inch in a steam line is stated in a scale of acid and alkaline reaction which we call pH. The numbers run from one to fourteen. Seven represents the neutral point. The correct amount of alum is that which brings the pH to a point near 4.6, that is, definitely on the acid side. It has lately been found that the conditions most favorable to precipitates of silicate in water do not necessarily hold in the presence of pulp, but that somewhat more alum is required amounting in many cases to as much as fifty per cent of the weight of silicate. It has also been found that proportionately better results are obtained with more than minimum quantities of silicate, that is, a given effect will be greater per pound of silicate when silicate is used at a concentration of six per cent based on the fiber stock, than if only three per cent were used. We hope a little later to be in position to publish some of the data on which these general statements are based, but in the meantime, we are glad to discuss any individual case and to apply the information we have as far as it goes. A great many paper mills will not wish to install the equipment necessary for measuring values on the pH scale electrically, but easily manipulated color standards are now to be had which give a close indication from the state of affairs in the beater, and their use will unquestionably enable the paper maker to obtain more from the use of silicate than would otherwise be likely.

It is to be remembered that the effects of silicate are cumulative, for better precipitations are secured as the white waters are returned to the machine. Thus the effect may continue to improve for as much as six or seven hours after the addition of silicate has begun.

There are a few kinds of paper in which silicate offers no advantage. It must not be assumed that silicate will add much to water resistance or entirely replace rosin size, though improved water resistance has repeatedly been secured due to better retention of rosin with the aid of silicate. Silicate tends to give a hard, smooth surface, to lay fuzz, and to increase the density and rattle of the sheet. It often improves the color due to better retention of the coloring substance and in many instances there is a perceptible gain in strength. Though it must not be assumed that silicate can take the place of an adequate fiber stock, instances are on record where a cheaper furnish has been made possible due to the qualities imparted by the use of silicate. Finally, the cost of silicate is usually very small because it carries water in combined form into the sheet as well as increases the retention of short fiber and ash, thus adding to the yield and producing a credit for increased material sold which reduces and sometimes entirely offsets the cost of chemicals.

In summary, the paper maker needs the right silicate, the appropriate amount of alum, a beating routine adapted to the requirements of his particular paper. With these in hand he will find silicate a very useful servant and an instrument which will help him obtain results which in many cases would otherwise be beyond his reach.

Henry A. Wise Heads Canadian Newsprint Co., Ltd.

Henry A. Wise has resigned from the firm of Wise, Whitney & Parker, a well known firm of New York attorneys, to become the president of Canadian Newsprint Company, Ltd., with offices in the Graybar Building, 420 Lexington Avenue, New York.

Mr. Wise has been the legal adviser of the Import Committee of the Paper Industry since its organization and has a large acquaintance among pulp and paper manufacturers throughout the United States and Canada.

Allis-Chalmers Mfg. Co., Milwaukee, announces the appointment of R. T. Stafford, formerly district manager of the Seattle office, as assistant manager of the electrical department in charge of sales engineering at Pittsburgh Transformer Works.

Southeastern Division Superintendents Holds Meeting

THE meeting of the Southeastern Division of The American Pulp and Paper Mill Superintendents Association, held at Lynchburg, Va., March 16 and 17, 1928, was one of the most inspiring and helpful gatherings in the history of the Association.

The Friday sessions were given over to papers which evoked profitable discussions. W. D. Mount of W. D. Mount & Son Eng. Co., read a very complete and instructive paper on the "Importance of High Test, Uniform Quality Chemical Lime for the Soda and Sulphite Mill." At the afternoon session an extremely interesting and valuable paper entitled "The Use of Silicate of Soda in the Manufacture of Paper" was read by W. H. Buxton of the Philadelphia Quartz Co. At this session, following the papers on the program, Carl Magnus brought up the subject of Pre-Dryers. Opinions were voiced by many of the members and the discussion of this subject led to a general review of the topic "free and slow stock," in which a large number participated.

The banquet Friday evening was a very enjoyable occasion. A delightful program had been planned which included a variety of entertainment. A. D. Barksdale of Lynchburg acted as toastmaster, and introduced Lewis Mauer, superintendent of the Craddock-Terry Co. of Lynchburg, who spoke on "Human Relationship in Industry." He gave statistics revealing the increased output of Virginia industries, especially in the pulp and paper industry during 1926 as compared with 1905. He told of the industrial, economical and agricultural development in the Old Dominion since 1905 and dwelt on the tendency of centralization and standardization in American industry. The principal speaker of the evening was Dr. A. B. Conrad, of Roanoke, Va. Dr. Conrad spoke on "Contact." His address was of a serious nature and very inspiring. He handled his subject in a very entertaining manner and interspersed his remarks with a great deal of humor.

Saturday, those in attendance enjoyed a most delightful trip from Lynchburg to Big Island and Natural Bridge, Va. An inspection tour was made over the properties of the Bedford Pulp and Paper Co., followed by luncheon at the Natural Bridge Hotel.

A special invitation had been given the ladies to attend the association and a committee was appointed to arrange entertainment for them during the business sessions of the conference.

Registration

Albemarle Paper Mfg. Co.—J. A. Inge, H. Owen; **Arabol Mfg. Co.**—Lester W. Grouse.

Bedford Pulp and Paper Co.—Mr. and Mrs. Wm. Brydges, Mr. and Mrs. S. C. Foster, Mr. and Mrs. R. E. Winfree, Mr. and Mrs. B. J. Vos; **R. A. Burroughs Co.**—R. A. Burroughs.

Champion Fibre Co.—R. J. Sprang; **Craddock-Terry Co.**—Lynchburg, Va.

E. I. DuPont de Nemours Co.—J. Carl Schmidt.

Eastwood Wire Mfg. Co.—E. N. Bechard.

General Dyestuffs Corp.—H. F. Hoffman; **W. E. Greene Corp.**—W. E. Greene; **B. F. Goodrich Rubber Co.**— R. H. Whitney.

Lindsay Wire Weaving Co.—J. W. Raines; **Lynchburg Chamber of Commerce**—Robert Ramsey.

W. D. Mount, & Son Eng. Co.—W. D. Mount, W. D. Mount, Jr.

Paper Mill and Wood Pulp News—Mr. and Mrs. L. D. Post; **Philadelphia Quartz Co.**—W. H. Buxton.

Randolph Macon Women's College—Mr. and Mrs. W. M. Black.

Shartle Bros. Machine Co.—W. A. Gocke, R. S. Stewart; **Standard Paper Mfg. Co.**—C. Scott Dansey, Mr. and Mrs. Carl Magnus, Mr. and Mrs. B. K. Steadman, Mr. and Mrs. E. H. Neblett.

Big Island, Va.—Mr. and Mrs. C. J. Baker, Mr. and Mrs. A. Taylor, Mr. and Mrs. J. Denton, Rev. P. F. Arthur; Lynchburg, Va.—A. D. Barksdale; Richmond, Va.—Wm. W. Michaux; Roanoke, Va.—Dr. A. B. Conrad.

Miami Valley Safety Conference

Mill Representatives Hear Good Talks

THE safety conference held at the Hotel Anthony Wayne, Hamilton, Ohio, March 16, 1928, was very well attended, and the interest manifested by all present indicated that the State of Ohio is fully awake to the importance of organized safety. The untiring efforts of K. L. Faist, safety director of the Champion Coated Paper Co., Hamilton, and regional director of the State of Ohio in the Paper and Pulp Section, National Safety Council deserve commendation. Speakers of national repute delivered safety talks applicable to every-day life in the factory, on the street and in the home.

D. D. Thirkield, safety director of Sorg-Oglesby-Smith Paper Co., Middletown, Ohio, introduced Dr. Mark Millikin, councilman of the City of Hamilton, who welcomed the delegates and expressed the city's appreciation for its selection as a meeting place. Dr. Milikin emphasized the value of safety in all walks of life, but especially where the giants of industry are turned loose to produce power for the operation of factories and mills. His advice was to practice the Golden Rule, think of the other fellows' safety, and to overcome the attitude of carelessness.

Accident Prevention

Thomas P. Kearns, superintendent, Industrial Commission of Ohio, was introduced, and spoke on the subject of "Accident Prevention." He stated that in 1927 there were 90,000 persons killed in the United States. Of this number, 46,000 were public accidents, 22,000 by automobiles, 22,000 in homes. Of the latter number, 13,000 were children under the age of fifteen years.

In the pulp and paper industry of Ohio, there was a total during the past year of 1,953 accidents, resulting in 79,264 days of lost time. Nine accidents were fatal, thirteen permanent partial disability, 535 resulted in lost time of over seven days each or a total of 13,782 days. 326 accidents resulted in lost time of less than seven days each, and amounted to 1,220 days. Five of the fatal and two permanent partial disability accidents occurred in plants classed as manufacturers of strawboard, box board, roofing felt, etc., while four fatal and ten permanent partial disability accidents occurred in plants making writing, book and newspaper.

Causes and Rating of Accidents—The speaker gave the following table showing the causes and rating of accidents:

Cause	Frequency	Severity
Machinery	1st	3rd
Handling of objects	2nd	2nd
Stepping on or bumping int	3rd	5th
Falls of persons	4th	1st
Handling tools	5th	6th
Falling objects	6th	4th

Of the classification mentioned, approximately $90,000 is paid out by the State, while no figure can be given on the self-insured companies such as The Meade Pulp and Paper Co., The Champion Coated Paper Co. and others. It is estimated that the indirect loss is four times as great as the direct loss. We would, therefore, have the sum total of $360,000 plus the $90,000 or $450,000, approximate loss due to these accidents, a very substantial economic waste.

First Aid—First Aid is absolutely necessary. It was Mr. Kearns' belief that about 75 per cent of the accidents might be avoided if proper precaution is taken. During the last ten or eleven years, the steel industry has had a reduction of 83 per cent in the number of accidents. This was accomplished through safety methods. The N. & W. Railroad has reduced its accidents 64 per cent in three years. The pulp and paper mills have also made some very remarkable records in the reduction of accidents.

Individual Responsibility—To accomplish results in safety work, systematic effort on the part of each one concerned is required. Much of the responsibility rests with the employer, but the worker must use his head and give thought to his task. The employer should provide necessary guards and safety devices for the safety of workers, and there are but few who evade this responsibility. About 90 per cent of accidents is due to the carelessness of workers.

There are conditions that cannot be overcome, such as sickness in the family which will take a worker's mind from his work. It may be that debts worry him. Instances of this nature can sometimes be overcome, but such existing conditions may lead to an accident.

Safety Education—Education is the first step in accident prevention. Locate hazards, then eliminate them. The safety attitude must start with the employer and extend down through the superintendent and foremen to the men in the plant. Command the respect and confidence of the worker and results will be obtained. Treat him humanly, show an interest in him, and his confidence will have been gained. Mr. Kearns' closing appeal was for education and co-operation.

Safety in All Industries

E. W. Corn, representing the National Safety Council, spoke on "Safety in All Industries." He declared there is no difference in the safety problems of the railroads, steel mills or paper mills. If mistakes have been made, it is because too many technicalities have entered into safety work. The speaker covered three basic points in accident prevention.

Recognition of the Hazard—It is not possible to make a plant absolutely safe. There is a certain risk in every action. In the mill, or on the street, learn to recognize these hazards and teach others how to avoid them. Goggles are very important in many kinds of work, especially so in grinding, buffing and chipping. An eye can be easily lost.

Mental Alertness and Dexterity—About 75 per cent of all accidents occur from the ears up. The worker should give thought to his job. There is no side entrance to safety in the industrial game. If workmen in the plant would co-operate with the executives, and vice-versa, there would be no great safety problems. The superintendents and foremen must give the men proper supervision. Interest them in safety, and they will think safety along with their work.

There are reasons for inefficiency. If the worker does not fit the job, place him where he does fit. It is impossible for a man who can do nothing but handle a pick and shovel to operate machinery safely.

Watch Where You Go—Workers should be educated in safety and trained to depend on intelligence. Carelessness and lack of co-operation will not bring results. Mr. Corn outlined the practice of one company that is getting real results by interesting its workers. There are safety committees in the plan, and once each week these committees meet with the officers of the company. Hazards are reported, safe methods suggested and turned over to a department whose duty it is to make investigations with the idea of correcting conditions. A report is submitted to the president along with recommendations. Hazards are corrected by this practice wherever possible. Such a system will create interest in any plant.

Safety and Hygiene

Following the dinner, which was served at six o'clock, Charles G. Barth, safety engineer, Industrial Commission of Ohio, gave a very interesting address on "Safety and Hygiene." He spoke of the Division of Safety and Hygiene, which has only been functioning since 1925 under the direction of T. P. Kearns. The division consists of a statistical department, which determines and analyzes the sources of accidents as presented to the Industrial Commission and uses that information as a basis for determining the source and conditions responsible for the accidents. The division also maintains a corps of safety engineers and investigators who make plant surveys, assist safety committees and co-operate in accident programs where advisable. There is also a medical department to look after the health of employees in industrial plants. Accident prevention bulletins and safety posters are published, and speakers furnished. This year a monthly magazine has been published in the interest of the Ohio Industrial Commission and its aims.

Among the elements considered in safety work, the speaker enumerated the elimination and minimization of carelessness, the installation of mechanical safeguards, mechanical engineering revision, humane engineering and first aid.

Mechanical Safeguards—Gears, pinions, pulleys, belting,

couplings, extending set screws and keys should be safeguarded and safety appliances to high pressure equipment installed. Open transformers should be enclosed, and men should be compelled to wear goggles where their eyes are in danger.

Mr. Barth related several accidents which were the result of unguarded equipment.

The Human Element—After attention has been given to mechanical safeguarding, there remains the human element. Thoughtlessness and indifference are very great hazards of occupation. The accidents resulting from the human element may be eliminated by means of human engineering, which the speaker defined as meaning, the education of the worker to safety first.

Mills Well Represented

Representatives of the following mills were present at the conference: Beckett Paper Co., Champion Coated Paper Co., Crystal Tissue Co., Frank Board & Paper Co., Gardner & Harvey Co., Mead Pulp and Paper Co., Ohio Boxboard Co., Richardson Co., Sorg-Oglesby-Smith Paper Co. and Wardlow-Thomas Co.

Meeting of Paperboard Industries Ass'n

The meeting of the Paperboard Industries Association, held in New York March 21 and 22, 1928, was well attended, and the program proved very helpful to all present.

General Meeting—A general meeting was held the afternoon of March 22nd, at which President W. J. Alford, Jr., of the Continental Paper Co., submitted a report containing the recommendations of the Executive Committee. These were duly adopted by the association. Officers who presided at Group meetings were called upon for brief reports upon the subjects which had been considered at the meetings of their respective groups. Thus, all members were apprised of subjects that are under consideration by the different groups.

Folding Box Group—At the meeting of this Group, a subject to which special consideration was given was that of extending the use of folding boxes, and particularly inaugurating the use of these boxes by industries which are not now using them. Surveys which have been made at shippers' factories show conclusively that in a number of different fields, shippers of goods which are now sold in bulk or in other types of packages, may derive substantial benefit from packaging their goods in folding boxes. Reports were also received from committees who have subjects under consideration.

Paperboard Group—Vice-president E. R. Hankins presided at the meeting of this group, and an interesting report was given by him, in which certain conditions existing in the industry were pointed out. Report was made that the freight specifications, applicable to the loading of sewer pipe in full carloads, had been amended so as to permit the use of .200" pulpboard sheets at the end of tiers, and strips of double-faced corrugated board between the layers of pipe. This subject is being further investigated, and it may lead to the use of paperboard in appreciable quantities in this new field. It was announced that there are now 58 members enrolled in the Paperboard Group, which is the largest membership that has ever been attained.

Container Group—At this meeting, General Manager Browder submitted a comprehensive report on container subjects. It was also announced that the Container Handbook would soon be off the press. This booklet is being prepared in three separate volumes containing information and data as to—(1) Corrugated Products, (2) Solid Fibreboard Products, (3) Both Corrugated and Solid Fibreboard Products.

The next meeting of the association will be held at the Palmer House, Chicago, May 16 and 17, 1928.

The Supply and Equipment Association of the Paper and Pulp Association has become a section of the American Paper and Pulp Association, and W. N. Wilkinson, president, now has an office at headquarters on the sixth floor of 18 East Forty-first street to which he moved on Tuesday, March 20, taking the quarters formerly occupied by the Cost Association, which has been assigned a more commodious suite on the same floor.

The Joint Committee on Approved Pulp Testing Chemists for the Paper Industry of the United States, has accepted the following as approved pulp testing chemists: E. F. Whittington, Standard Paper Co., Kalamazoo, Mich.; Dr. Herman L. Joachim, Central Paper Co., Muskegon, Mich.; Wm. E. Breitenbach, Rainier Pulp & Paper Co., Shelton, Wash.; Harry C. Bradford, Rex Paper Co., Kalamazoo, Mich. and Fritz Grunwald, Container Corporation of America, Chicago.

Meetings of Paper Salesmen

On Monday of each week the Salesmen's Association of the Paper Industry, New York division, holds a luncheon meeting at the Canadian Club in the Belmont Hotel. At these luncheons a special grade of paper is featured for discussion, representatives of mills and merchants taking part.

On April 2, Charles Addoms, of Miller & Wright Paper Company, New York, talked on book paper, and at the luncheon on the following Monday, April 9, the speakers were W. E. Ebbetts, of Coy-Disbrow Company, and J. C. Mallilieu, of George W. Millar & Co., the set topic for discussion being coarse papers. Dr. E. O. Merchant, of Canadian Newsprint Co., Ltd., presented a comparative chart of business trends and discussed statistical curves.

Watching Irregularities in Paper Imports

Importation of fruit wrapping tissue paper wrongly classified as wrapping paper has been corrected, according to a report by the Import Committee of the American Paper Industry to its subscribers. The paper is now being held dutiable at a higher rate as tissue paper.

To evade the tariff law, Texas importers have been entering kraft wrapping paper as sulphite, to conceal undervaluation.

Undervaluation of Finnish book paper in the South has been disclosed through investigations by the Import Committee.

Importers of vegetable parchment paper in Florida have failed in an effort to have that paper classified for duty as wrapping paper, and the higher rate provided for greaseproof paper is now being paid.

Improper classification or valuation of several types of paper imported through New York has been corrected by the Customs Service officials. These include holiday paper tapes, crepe paper napkins, sensitized photographic paper and oiled sketching paper.

Major R. Y. Stuart to Succeed Col. Greeley

Col. Wm. B. Greeley, chief of the Forest Service, will resign May 1 to accept a position with the West Coast Lumber Manufacturers' Association. It is announced that Major R. Y. Stuart, assistant forester, is to succeed him.

Major Stuart entered the Forest Service in 1906 direct from the Yale Forestry School. Upon returning from military service in France, he became deputy commissioner of forestry in Pennsylvania, and later served as secretary of the Department of Waters and Forests of that State. He became associated with the Forest Service in February, 1927.

Col. Greeley has been with the Forest Service since 1905. In 1918 he became chief of the forestry section of the A. E. F., and during his two years' service he was rewarded for distinguished service by England and the United States, and was made a chevalier of the Legion of Honor by France.

As National Councillor of the United States Chamber of Commerce to represent the American Paper and Pulp Association at the annual meeting in Washington, D. C., beginning the week of May 7, the executive committee has named L. M. Alexander of the Nekoosa-Edwards Paper Co., with M. E. Marcuse, of the Bedford Pulp and Paper Co. as sub-

stitute. D. Clark Everest, president, will represent the association as a delegate, O. M. Porter, secretary, being an alternate delegate.

Americans Invited to German Convention

Several inquiries have been received concerning the summer convention of the German association of pulp and paper chemists and engineers to be held at Heidelberg, Germany, from June 6 to June 22, 1928. A general invitation is extended to representatives of the American paper industry to attend, and reservations are being booked by the North German Lloyd steamship line on the steamer **Berlin**, leaving New York on Saturday, May 26. Members of the Canadian Techhnical Section and of T. A. P. P. I. will be especially welcome and it is suggested all who propose to attend should communicate with the respective secretaries and obtain credentials. Opportunity will be afforded for visits to Scandinavian and British mills following the convention.

The itinerary for visitors from Canada and the United States is as follows:

Saturday, May 26—Departure from New York on the North German Lloyd steamer **Berlin**. Arrive in Bremen June 4.

Tuesday, June 5—Arrival in Cologne; auto trip through the city, with visits to the Cathedral, Town Hall, Treasury, and other places of interest.

Wednesday, June 6—Trip by auto bus to Bergisch-Gladbach; inspection of the fine paper mills of J. W. Zanders.

Thursday, June 7—River Rhine excursion from Cologne to Biebrich; automobile trip to Wiesbaden.

Friday, June 8—Inspection of pulp and paper mills in Aschaffenburg; visit the Stockstadt mill, or trip to Darmstadt, with visit to the Technical High School and the Paper Technical Institute.

Saturday, June 9—Auto trip to pulp mill at Waldhof; visit the mill at Oppau; the dye factories, chloride of lime plant and the paper mill at Ludwigshafen.

Sunday, June 10—Arrive at Heidelberg.

Monday, June 11—Summer convention of the German Association of Pulp and Paper Chemists and Engineers; papers and discussions; banquet in the evening.

Tuesday, June 12—Tour of the city, with inspection of student dwelling places, The University, and students' prison, followed by trip up the left bank of the Neckar to Neckar-Gmund and back on the right bank to Neckarhausen and Hirschhorn, thence to Eberbach for luncheon; farewell celebration at Heidelberg in the evening.

Wednesday, June 13—From Heidelberg to Munich via Heidenheim, Heilbronn and Crailsheim; inspection of the machine plant of J. M. Voith, Heidenheim.

Thursday, June 14—Munich; inspection of the Munich-Dachauer paper mill; trip on the Starnberger Lake.

Friday, June 15—Visits to points of interests in Munich; trip to Augsburg.

Saturday, June 16—Inspection of the newsprint paper mill of Haindl Bros. at Augsburg; trip to Nürnberg.

Sunday, June 17—Sightseeing trip in Nürnberg, with visits to the Castle and other points of interest.

Monday, June 18—Dresden.

Tuesday, June 19—Berlin; a walking tour of the city, with inspection of Palace, Arsenal, Government Buildings, etc.; auto trip to Grosskraftwerk Klingenberg.

Wednesday, June 20—Stettin; inspection of the Odermünde mill and the Feldmühle paper and pulp mills, followed by a short trip around the city.

Thursday, June 21—Potsdam; visits to place of historical interest.

Friday, June 22—Bremen, and departure next day on the steamer **Columbus** of the North German Lloyd for New York.

The New York office of the Champion Coated Paper Company at 2 Lafayette Street is now under the management of George S. Johnston, who has had considerable experience in the sale of Champion products through his former connection as general salesmanager of the Western Newspaper Union where he had charge of eleven divisional warehouses selling book and coated papers.

Review of Swedish Woodpulp Industry

In a communication to the **Swedish-American Trade Journal**, John B. Osborne, U. S. consul general, Stockholm, brings out some of the outstanding developments in the Swedish woodpulp industry during 1927. The contrast between volume of sales and prices obtained is first noted. Prices declined consistently throughout the greater part of the year. Quotations of easy-bleaching sulphites to British and continental buyers decreased from $2.94 and $3.07 per 100 pounds, c.i.f British or north European ports, in January, 1927, to $2.60 and $2.77 at the end of the year, while strong sulphates declined from $2.82 and $2.93 to $2.30 to $2.50. Quotations on kraft pulp (strong sulphate) were from 10 to 14 cents above strong sulphites. Prices to American buyers, which are quoted ex-dock, dropped from $3.00 in January to $2.45 and $2.70 at the end of 1927, and strong sulphate decreased from $2.95 and $3.10 to $2.65 and $2.75.

The principal cause of the decline in prices is ascribed to the great increase in the production of pulp in all producing countries—an amount too great to be absorbed by the demand—which was not as large in 1927 as had been anticipated.

As the newsprint market usually has a deciding influence on the woodpulp trade, it was predicted as early as February that the world production of sulphite pulp alone in 1927 would exceed the consumption by approximately 300,000 tons. In March the danger of an overproduction of sulphate pulp in Sweden, in view of the increase in production of this pulp in North America, was pointed out. At the end of 1927, however, there did not appear to have been any heavy unsold stocks of chemical pulps on hand in Sweden.

Sales of chemical pulp made rapid progress during the first half of 1927, between 75 per cent and 80 per cent of the anticipated output having been disposed of at the turn of the half-year. Thereafter, business slowed down gradually, and at the end of November sales for 1927 could be considered practically closed.

An outstanding development in the chemical pulp trade—and to a certain extent a direct result of the decline in prices and the uncertain outlook for the future—was the large number of so-called conversion sales which became particularly prominent in May and the succeeding months. These conversions entailed a large number of cancellations of existing contracts for 1927 and the substitution therefor of new contracts for 1927 and 1928, concluded at prices somewhat lower than those stipulated in the original contracts.

Although the effect on the Swedish chemical-pulp industry of the marked increase in the activities of the Canadian pulp-mills and the production of newsprint in that country was serious enough, it spelled disaster to the mechanical groundwood industry in Sweden. With the advance of the year, the situation went from bad to worse, production had to be greatly restricted and many of the small mills preferred to shut down rather than continue operating at a loss. At the end of the year a lockout was threatened upon notice of the cancellation of the labor agreement by the employers in the woodpulp industry, and the refusal of workers to accept the terms offered. Negotiations continued up to the last day of the year, with little prospect of an amicable settlement, and a lockout affecting 17,500 workers was proclaimed by the Swedish pulp-mills effective January 2.

Stanley P. Benton Heads E. D. Jones & Sons Co.

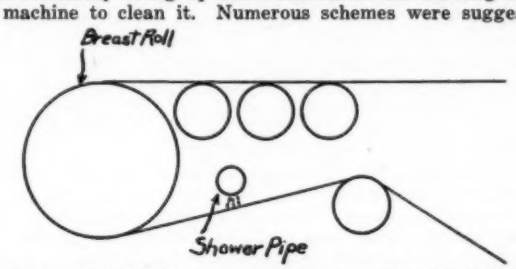
Stanley P. Benton has been elected president of E. D. Jones & Sons Co. to succeed the late E. A. Jones. Mr. Benton and all of those now in charge were associated with the late Mr. Jones for many years, and it is their intention to pursue the same business methods which were followed by him, in order not to lose the reputation established by the company in the industry, which has been maintained during two generations.

The company will cater to the mechanical requirements of the paper manufacturers, not only in the United States and Canada, but in all parts of the world. The best materials will be used, and the workmanship will be of the highest quality, as under the administration of the late Mr. E. A. Jones, who was president and treasurer from 1904 until his death.

Practical Helps for the Mill Man

Shower Pipe Eliminates Wire Troubles

A MILL manufacturing hanging papers, using old papers as a large part of the furnish, experienced considerable difficulty with the wire on the fourdrinier machine. The wire was constantly filling up and necessitated the shutting down of machine to clean it. Numerous schemes were suggested



by various individuals as means of overcoming the difficulty. Most of the suggestions were tried, but to no avail. In some instances the wire actually gave more trouble through the use of some of the suggestions than it had previously.

The mill superintendent finally decided to install an additional shower pipe to those already operating on the wire. The pipe was located near the breast roll end of the machine in the approximate position as shown in the sketch. Water under 35 to 40 pounds pressure discharging from the pipe across the entire width of wire eliminated all of the difficulty, and it is no longer necessary to shut down the machine because of a filled-up wire from the old paper stock.

Perforated Steam Pipe Used to Clean Washer

A BOARD mill superintendent experienced considerable loss of time in the cleaning operation of the wires of the disc washers used in his mill. Due to the nature of the stock being washed, it was necessary to steam out the washers at least once every eight hours. After the washers had been first installed, an ordinary steam hose was used to steam out the wires of the washers.

Such procedure required considerable time, and to decrease the time it was found advantageous to make a special device for this operation. The device consisted simply of short sections of pipe fitted in the form of a two-tined fork with the pipes forming the tines closed at the far end and perforated on the sides facing the wire of an individual disc. The perforations were placed about 3" apart and were about 1/16" in diameter. 3/4" pipe was used for the device. A valve was located in the short section of pipe to which the steam hose was attached as designated in the illustration for the control of steam discharge.

Through the use of this piping and hose arrangement, it was possible to shift the device easily from one disc to another. Likewise, through the use of the apparatus, considerable time was saved in the cleaning of the wires.

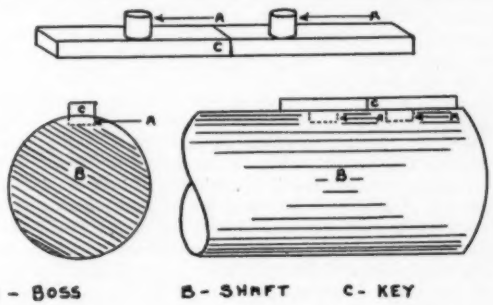
System for Control of Rag Room Operation in Roofing Felt Mill

A ROOFING-FELT mill superintendent was confronted with the problem of reducing labor cost per ton in the operation of the rag room and beater room of the mill. The layout of the mill was such that the rag room was located on the floor directly above the beater room. After a careful study of the installation, it was found advisable to relocate the rag cutting and conveying equipment in such a way that the rags should pass through the rag cutters in tandem, and then be conveyed along the rag room floor directly above the beaters. An individual hopper was designed to connect each beater with the rag conveyor and thus each beater could be filled automatically by gravity.

In addition to the relocation of the rag cutting and conveying equipment was the installation of a signal system to faciliate the operation of the whole scheme. In this system is included a combination lighting and electric horn circuit with a three-way switch conveniently located to each beater and with the lights and horn on the rag room floor. The circuit is arranged so that the first turn of any signal button sounds the horn to notify rag cutter operators to begin work; the second turn of a button operates the lighting circuit and by means of a red light designates beater to be filled; the third turn of the switch again sounds horn signalling rag room workmen that beater in question is filled. In addition to this circuit is a secondary light circuit which is controlled by a switch located conveniently on the beater room floor. The function of this circuit is to inform the rag room workmen whether equipment which they are operating is to be shut down or to be continued in operation. This system of conveyors together with the signal arrangement has meant a material reduction in labor cost per ton.

Practical Means of Attaching Pulley To Shaft Without Keyway

MECHANICS are often required to handle unusual problems. Sometimes it may be necessary to fasten a pulley to a shaft in a position where no keyway is available. A number of schemes are employed to fasten a pulley to a shaft under such conditions, but many of them are unsatisfactory.



A simple and very practical way for doing such a job may be briefly described as follows: Drill one, two or three holes in the shaft in perfect line with each other, making holes ⅛" to ¾" deep, and of the same width as the keyway in the pulley. Then take one, two and three pieces of keysteel of a total length sufficient to properly hold the pulley in position on the shaft and chuck this steel in a lathe. Each piece should be turned back so as to leave a round boss in the center and with a diameter to make driving fit with its corresponding hole in the shaft. The remainder of the key should be of proper height and width to fit the keyway in the pulley.

This device not only permits the workers to do a neat job, but it will stand up very satisfactorily in service.

National Lime Ass'n Convention

The 1928 convention of the National Lime Ass'n is to be held at the Belmont Hotel, New York City, May 23 and 24. This meeting will be broad in its scope, and will, in fact, be a convention of the industry rather than of the association.

Questions bearing directly upon conditions which prevail in various sections are being submitted and will serve as the basis for round table discussion.

The Month at Washington

THE revenue tax bill which passed the House and has been peacefully slumbering in the Senate because the Congressional meteors went on a rampage in cutting the revenues beyond all profitable returns, is suddenly waking up and taking on new life. President Coolidge announces from the White House that as matters now stand it will be possible to have tax reduction in the original estimated cut of $225,000,000 but no more, and provided further that Congress does not with new legislation decide to spend the surplus now in the Treasury instead of giving it back to the taxpayers through reduced taxes. A reduction of $289,000,000 as proposed in the bill which passed the House is impossible, in the President's view. The figures on income-tax returns due as of March 15th though not fully compiled also lend encouragement to a tax cut.

The Trade Mark Bill—A series of proposed changes in the trade mark bill (H. R. 6683), constituting a compromise reached by various interests concerned as a result of extensive hearings held by the House Committee on Patents, may result in passing this bill in the near future. The compromise measure is calculated to embody all the good features of the existing law on trade marks and to add other and important features which are desirable to make trade mark procedure more effective and simple for those who apply. Most of the opposition came on the score of the so-called deposit section which permits the depositor or entry at the Patent Office of any mark on the payment of $2, although this entry would have no legal effect except as evidence of the date of filing. The Patent Office is seeking in this bill to get the largest collection of marks possible for the purpose of protecting the honest manufacturer so that he will not, through inadvertence, use marks upon which claims have been entered. Section 3(bé of the bill is designed to assist manufacturers engaged in foreign trade to obtain quick action in securing protection in foreign markets against foreign competition, and permits the Patent Office to register a trade mark to be used in export trade subject to search and examination upon the payment of $25 when accompanied by a "verified statement that such mark distinguishes or is adapted to distinguish the goods of these applicants." The so-called multiple registration of trade marks was violently opposed, that is, permitting the use of the same trade mark by two or more applicants in different territories. Another section of the bill, Section 24, provides trade mark protection on items that cannot be visibly trade marked, an example of which would be "sunkist" oranges.

Limiting the Interstate Commerce Commission—Restrictions of the power of the Interstate Commerce Commission to prescribe minimum rates is provided in a bill (H. R. 11721) recently introduced by Congressman Newton of Minnesota. The measure would amend section 15 of the Act, and follows on the heels of the decision rendered in the lake cargo coal case. This is the first of a series of bills contemplated to take away from the Commission "a sort of super-guardianship power" and to return to the railroads the initiative in making rates. The object is to restrict the commission from prescribing a minimum rate below which the railroads cannot go. Mr. Newton thinks that railroad rates should be fixed by the railroads through their traffic experts, who are presumed to know what the service is worth, what it costs and what rates will move a commodity to market. The rates of common carriers should be high enough so as to do justice to the carriers and low enough to be reasonable to the public who must have the service, and so made as not to be unduly discriminatory.

The Senate Committee on Interstate Commerce also reported favorably on a bill (S. 1263) to amend section 4 of the Act (long and short haul rule), a bill designed to stop discrimination against the people of the interior States of the West, the Northwest and the Southwest, who are served by the transcontinental railroads and for the protection of the Panama Canal. For more than a quarter of a century these people have fought the discrimination in freight rates caused by the railroads being permitted to charge more for the shorter haul than for the longer haul on the same class of freight moving in the same direction.

Anti-injunction Bill—The Shipstead bill (S. 1482) to limit the issuance of injunctions by courts of equity, has been under fire in hearings held by the Senate Judiciary Committee. The general counsel J. A. Emery, of the National Association of Manufacturers, opposed the measure and said that if the 15 labor injunctions issued in the last 5 years was "government by injunction," how about the 13,000 prohibition injunctions issued during the same period. Particular emphasis was laid by Mr. Emery on what he termed the unusual unanimity of the Supreme Court in labor decisions. An injunction is issued only to prevent otherwise irreparable injury, he said. The form of the bill would withdraw equitable protection from intangible property, and no proposal could be more serious than one which would withdraw from the courts relief for property, he claims. The proponents of the bill are seeking to prohibit application of the judicial power to rights involved in labor disputes and base their claims on the alleged misuse of injunctions by state courts. But, said Mr. Emery, the labor organizations themselves have made use of this injunctive power. Besides, he claims the bill unconstitutional. He branded the anti-injunction bill as a revolutionary flower of that radical seed planted to prevent the courts from effectively interfering with riotous violence when the object is to destroy a business. While the bill is general in terms, the proponents have made it clear that its purpose is to destroy protection by injunction of those private rights of employer and employee or those paramount rights of the public which have been and are frequently assailed in labor disputes.

Stabilizing the Dollar—Congressman Strong of Kansas, introduced his bill (H. R. 11906) directing the Federal Reserve Board to use its powers for the stabilization of the purchasing power of the dollar, requiring the board to make public the reasons that prompt them to adopt measures to such end and directs a study of problem affecting the policy of stabilization. Such studies are to be reported to Congress annually, showing the effect upon the purchasing power of the dollar and of changes in the supply or and demand for gold—also to stabilize industry, commerce, employment, etc.

Sea Going Bill of Lading—Congressman White of Maine introduced a bill (H. R. 12208) relating to the carriage of goods by sea, or a bill-of-lading act for ocean carriage, and foreign trade.

Unemployment Insurance—Congressman Berger introduced a bill (H. R. 12205) to establish a Bureau of Unemployment Insurance in the Department of Labor to provide for the creation of a system of **compulsory** unemployment insurance for the purpose of insuring wageworkers against the hardships caused by unemployment, patterned after such insurance now in vogue in other industrial nations.

Department of Conservation—Congressman Garrett of Tennessee, introduced a bill (H. R. 12065) to create an executive department of the government to be known as the Department of Conservation, whose duty it is to foster, promote, develop and conserve national forests, etc.

Postal Affairs—The House is about to pass a bill (H. R. 89)

to declare the future policy of the post office establishment—the postal policy bill—a matter of vital importance to the business interests of the country and the public generally. The postal service leads all industry. It is rapidly approaching the billion-dollar-a-year business. The new bill lays down a definite policy for the guidance of postal operations. It declares that the post office establishment is an institution for the service of the American people and not operated for profit, and provides a just and correct method of accounting in the post office department—that postal wages shall not depend upon revenue—lays down the only fair and just principle of postage rate making, with paid mail matter taken as a whole, with aggregate revenues equaling the total cost of the service actually given.

The House is also about to pass a bill (H. R. 11279) authorizing the establishment of a uniform system of registration of mail matter, the main purpose of the bill being to provide protection to mailers and to increase the revenues of the department.

The postal rate bill (H. R. 12030) is also about to pass, the purpose of which is to increase and facilitate the postal business by an equalization and equitable revision of postal rates and the establishment of new postal facilities. This is the Griest bill and affects the rate on postcards, business reply cards and envelopes, penalty for deficient postage, defining rates on second class matter using the 1921 zone rates, reducing the transient rates also on second class matter, giving a bulk pound rate on third class matter, and reduction in rates to distant zones on fourth-class matter, combining special delivery with special handling, etc. The complete status may be had by applying for Report No. 1006 to the Clerk of the House of Representatives, Wm. Tyler Page. The provision for transmission in the mails without prepayment of postage business reply cards and letters in business reply envelopes at the rate of not more than 2c should prove a great advantage to business users of the mails. The revision knocks out an estimated loss of revenue of $13,585,000.

From an advertising standpoint, persons to whom advertising matter is sent are frequently deterred from replying because they must affix postage or because they may not have the necessary postage on hand. It is claimed that the advertiser will gladly pay this postage and that a much larger percentage of returns will be secured by advertisers if the prospective customers can be relieved of paying the postage, and that the adoption of such a facility will result in an increased use not only of the letter or card, but also of other classes of mail. The bill allows collection on delivery.

In a bill introduced by Congressman Foss (H. R. 11476) the Postmaster General would be authorized to impose demurrage charges on undelivered collect-on-delivery parcels.

A bill introduced by Congressman Watson (H. R. 11921) would prohibit the sending of unsolicited merchandise through the mails for the purpose of sale.

Recent Interstate Commerce Rulings—Storage charges on newsprint paper, in carloads, at East River piers 4 and 37, N. Y. C., were found not unreasonable or otherwise unlawful in a recent decision of the Interstate Commerce Commission and the complaint was dismissed (Star Co. vs N. Y. Central, No. 18348).

Rate on printing paper, in carloads, from Holyoke, Mass., to Bushwick station, Brooklyn, were found to have been unreasonable and reparation was awarded in Hudson Bag Co. vs N. Y., N. H. and Hartford R. R., No. 19538.

Rates on envelopes and papeterie, in carloads, from Springfield, Mass., to Dallas, Tex., were found unreasonable and reparation was awarded in Palmer & Co. vs N. E. Steamship Co., No. 18594.

Proposed increased rates on newsprint paper, in carloads, from points in Ontario and Quebec, Canada, to Nashville, Tenn., were found not justified in I & S Docket No. 2897 and the suspended schedules were ordered cancelled and the proceeding discontinued.

Recent Tax Decisions—Two decisions affecting contributions to the cost of maintaining a baseball team were adversely decided as income tax deductions for the claimants. In Majestic Mfg. Co. (No. 9760), the U. S. Board of Tax Appeals held that a sum paid as a proportionate share of the cost of maintaining a baseball team was not deductible as an ordinary or a necessary business expense or otherwise, while in National Yarn Mills an amount contributed towards the maintenance of the village baseball team was not an allowable deduction.

Damages paid on account of personal injuries to other persons resulting from the operation of your automobile are not allowable as a deduction under Sec. 214 (a) (6) says the Board in another case (B. M. Peyton, No. 31208).

An amount which is charged off in order to balance the books is not an allowable deduction in the absence of evidence that a loss was sustained during the taxable year (No. 10135).

Amounts paid by a partner of a portion of the insurance premiums on policies of the lives of himself and his partners under a partnership agreement, are not deductible as a business expense, says the Board in another ruling (C. W. McKay, No. 9465).

Recent Customs Decisions—Envelopes classified at 3c per pound and 30 per cent ad valorem under par. 1307 and 1308, tariff act of 1922, were claimed dutiable as plain paper envelopes at 3c per pound and 20 per cent ad valorem under the same paragraphs, and the U. S. Customs Court upheld the protest (H. Reeve Angel & Co., No. 233445).

Extraction thimbles and diffusion shells classified as manufactures of paper at 35 per cent ad valorem under par. 1313, were claimed dutiable at 25 per cent under par. 1303 as manufactures of pulp, and the court sustained the contention (200555, 251696, 237534).

New Paper Currency—Under (T. D. 42621) a recent Treasury Decision notice is given of a new distinctive paper for use in printing U. S. currency and other securities, described as cream-white bank-note paper closely resembling in general appearance the paper now in use, the distinctive feature consisting of small segments of red and blue silk fiber incorporated in the body of the paper while in process of manufacture and evenly distributed throughout. The order also reduces the size of notes, gold and silver certificates, federal reserve and national bank notes, and calls attention to the paper being subject to the provisions of Section 150 of the U. S. Criminal Code approved March 4, 1909, which prohibits any person or business from having or retaining in its control or possession such paper except under authority of the Secretary of the Treasury.

Trade Mark Squabble—In Ponemah Mills vs. Universal Crepe & Tissue Mills (No. 7220), the Commissioner of Patents recently ruled that toilet paper and cotton goods were not of the same descriptive properties for the purpose of trade mark registration, and allowed the registration of the trade mark "Soisette" for toilet paper.

Federal Trade Ruling—The Federal Trade Commission has ordered the Public Service Cup Company of Brooklyn who manufactures and sells paper drinking cups and paper dishes to cease and desist from a system of uniform resale price system. The entire output was distributed through jobbers who resold the articles to retail dealers and various users throughout the United States. It maintained two price lists, one of the price the goods was sold to the jobber and one price list of the resale price which was to be uniform throughout the country.

Forestry Facts—"Forestry Facts" is the title of a booklet just released by the Forest Service, giving useful information on forestry problems, forests and floods, forests and industry, forest fires, forestry practice, etc.

Who Pays the Corporation Tax?—The National Industrial Conference Board in a recent report has concluded that Federal income taxes cannot be shifted to the consumer and do not affect prices nor the movement of capital investment, except in unusual circumstances. This study deals with a fiscal problem around which political and economic controversy has been waged for many years, ever since and even before the corporation income tax law was enacted. Some 4,644 corporations were studied by the board. The report entitled "The Possibility of Shifting the Federal Corporation Income Tax" may be had upon application to the Joint Congressional Committee on Internal Revenue Taxation,

U. S. Capitol, Washington. This report constitutes the most comprehensive statistical analysis of corporation profits ever made. Competition and the resulting pressure to make profits on large turnover at a low margin of profit per sale, is found to be one factor which makes it impossible to obtain a price which would absorb the tax.

Exports of Manufactures Keep Pace with Production—The substantial and continuing growth of our export trade in manufactured goods is revealed in a trade bulletin just issued by the Commerce Department, showing two billion dollar exports last year. The improved buying power of the oversea markets is an encouraging factor for continual expansion. Increased exports mean increased prosperity at home and continuous employment in industry.

The U. S. Chamber of Commerce also points out that a record was also accomplished in the import field, among them "standard newsprint paper" of which 3,973,724,000 pounds were imported in 1927 valued at $131,489,000.

Wholesale Prices February—Practically no change in the general level of wholesale prices occurred from January through February on 550 commodities. The following change is shown for paper and pulp:

1927 Feb.	1928 Jan.	1928 Feb.	Purchasing power of 1926 dollar in Feb.
92.9	90.9	90.9	110.0

Employment and Pay-roll Totals—Employment in manufacturing industries generally increased 1½ per cent in February while pay-roll totals increased 4.9 per cent. The following change is shown in the paper trade with 1923 as the basis of 100:

	Employment			Pay-roll totals		
	1927	1928		1927	1928	
	Feb.	Jan.	Feb.	Feb.	Jan.	Feb.
Paper and printing..	104.4	103.8	103.3	113.3	113.8	113.0
Paper and pulp.....	94.5	91.3	90.4	102.1	97.4	98.2
Paper boxes.....	97.0	95.8	94.3	106.3	106.6	104.2

Paper Standardizing Activities—A survey of the paper standardizing activities of the Bureau of Standards shows that the bureau is devoting considerable attention to this important commodity and is getting profitable results from this work. Among other things the bureau guards all of Uncle Sam's paper purchases and through extensive tests insures the various government departments receiving the quality of paper for which they are paying. Over 2500 paper delivery samples are tested yearly. The bureau was instrumental in formulating the present government paper purchase specifications which have effected a large economy. It also constantly develops news specifications both for the government and in co-operation with industrial organizations. The facilities for paper work at the bureau are unique in that both personnel and equipment are available not only for exhaustive studies and testing of paper but also for actually making practically all kinds of paper. In addition to originating and perfecting many complicated test methods and instruments, the paper mill of the bureau has enabled it to contribute to papermaking technic. It has assisted the papermaker in utilizing new raw materials and in improving his papermaking processes. Its papermaking studies on government problems, such as the development of a better currency paper, have been of considerable profit to the government.

Use of Japanese Paper.—The use of Japanese paper is growing steadily in China, in the last 3 years China's consumption of Japanese paper having risen 45 per cent, while its consumption of all paper has increased but 15 per cent. Japan is now declared a very important factor in the supply of newsprint and M. G. cap. American paper continues to hold its own in those avenues of trade in which it is established, confined mostly to the better qualities of paper, and these lines are showing a steady yearly increase. So far as cheaper grades are concerned, American paper exporters have made up to the present but little progress. Where quality is the foremost consideration, however, American papers have been able to compete in price and have built up a reputation for a uniformly high standard.

NORTHERN NEW YORK NEWS

A. P. W. Company to Expand

In preparation for a new expansion program which will further enlarge the Albany plant, the Albany Perforated Wrapping Paper Co. has issued plans for a new financing program, which calls for the redemption of the entire issue of preferred stock valued at $110 a share and amounting to $1,500,000. To this will be added a dividend of $1.75 a share accrued up to March 31, 1928. Purchase of the preferred stock will be financed by proceeds from a new issue of $3,000,000 first and collateral mortgage 6 per cent bonds with an increase in the authorized common stock of 60,000 shares.

A new building is to be erected which, with the machinery, will cost $1,250,000. It is to be located near the barge canal terminal with a length of 300 feet and a width of 60 feet. It will be connected with the other plant structure. Seventy-five additional men will be employed and the daily output will be increased from 75 tons to 135 tons. A new papermaking machine which will manufacture a sheet 176 inches wide at the rate of 600 feet a minute, will be purchased. The company will enter the market with more of the cheaper grades of tissue paper and toweling than before. Under the new plans, there will be a greater amount of water shipments of pulp. Last year a cargo of pulp was received from Nova Scotia every three weeks. This season a cargo will unload every ten days. The plant now employs 625 persons. The company owns its own forests and has a pulp mill at Sheet Harbor, Nova Scotia, from which point the pulp is shipped by boat to Albany. The enlarged plant will be in operation before the end of the year.

Carthage Mill Improves Machinery

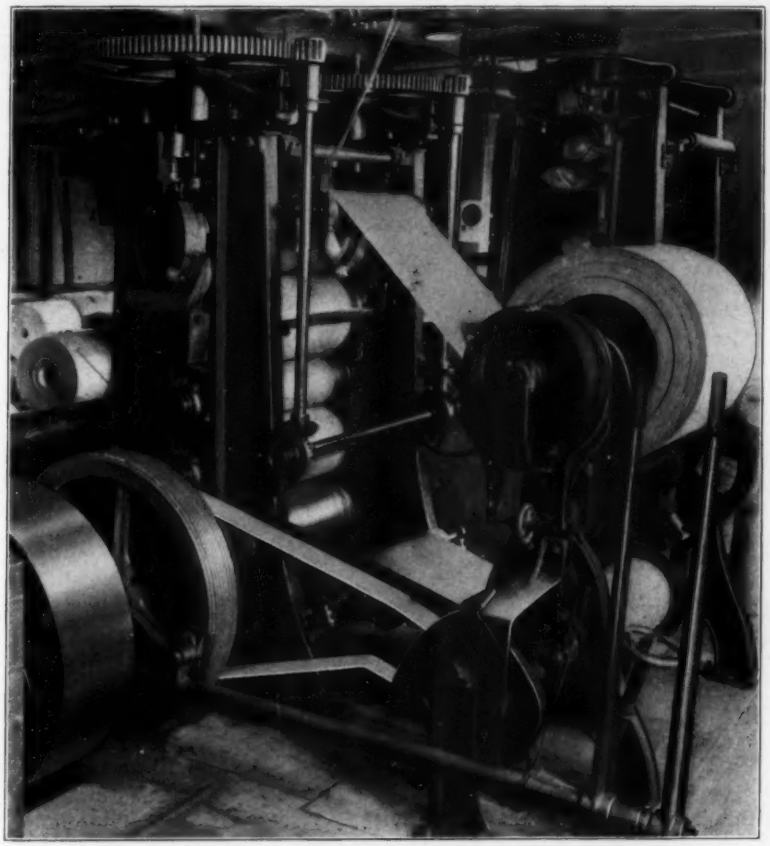
Recent changes and improvements in the No. 2 paper machine making ten-pound stock at the National Paper Products company plant at Carthage, has made it possible to speed the machine 80 feet a minute. Running at a speed of 540 feet a minute it is believed that the present speed equals any machine making ten-pound stock.

Among the improvements made was a change in the gear drive whereby the old mortiss drive was replaced by the latest Bagley & Sewall Co. new type gear drive. The drives are entirely encased and are run in oil. They are mounted on Timken roller bearings and are free from vibration and noise. Changes will be made on No. 1 machine making a 34-pound towel stock. The No. 2 machine has been averaging better than 18,000 pounds of paper daily. It is one of the four machines of the Carthage mill.

The Carthage Sulphite Pulp & Paper Co., bankrupt and out of existence, through Charles E. Norris as receiver, must make good $49,321.36 with interest from 1921 to the Peribonka Co., Ltd., of Quebec, according to a decision handed down by the Superior Court of the province. The amount represents a lien held by the Peribonka Co. against the Quebec-Saguenay Co., Ltd., a subsidiary of the Carthage Sulphite, organized for the controlling of the latter's Canadian holdings.

The Taggart Oswego Mill

The paper department of the Taggart bag factory will open April 15, it is announced, employing 75 papermakers. The bag department has been running for several weeks, but the paper stock has been coming from other plants of the St. Regis group. The Taggart multi-wall cement bags will be manufactured. William Campbell, who was formerly with the Nashua River Paper Co. of East Pepperhill, Mass., has been appointed superintendent of the plant. David A. Fleischman will be superintendent of the bag department. He will also have charge of the bag department of the Taggart bag mills in Watertown and in Herrings. Corwin T.



On a calender drive in the A. M. Collins Mfg. Co.

This photo shows a calender machine in the A. M. Collins Manufacturing Company of Philadelphia, makers of coated papers and cardboards.

Making good paper is a matter of good labor, good material and good machines—and that last includes good belts. So when the A. M. Collins Manufacturing Company wanted a belt to keep this calender running at maximum efficiency, they picked a belt ***made for the job*** by Graton & Knight. Only recently this same concern bought a Graton & Knight leather belt for their main drive, which was also ***made for the job.***

If you could cover the circuit of paper mills in the country, you would find Graton & Knight belts on the toughest drives in the industry. They have made records for long life and efficient operation. Send for the Standardized Belting Manual. It is full of real belting information and it tells you just why Graton & Knight belts last longer and run better. Use the coupon.

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WORCESTER, MASSACHUSETTS
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Western Manufacturing & Sales Division, Smith & Valley Iron Works Co., Portland, Oregon

Jewell, general manager of the St. Regis mills, will have general supervision of the Taggart mill in Oswego.

The following officers have been elected by Taggart Brothers, Inc.: Chairman of the board, Floyd L. Carlisle; president, B. B. Taggart; vice-presidents, J. W. Taggart, H. E. Machold and R. B. Maltby; secretary and treasurer, Jacob F. Amos; assistant secretaries, Clyde W. Miller and Ambrose Plunkett; assistant treasurers, F. A. Rogers and Carl B. Martin; directors, Jacob F. Amos, D. M. Anderson, Ambrose Plunkett, B. B. Taggart, J. W. Taggart, F. L. Carlisle, R. K. Ferguson, H. E. Machold, R. B. Maltby, D. A. Fleischman, C. T. Jewell, Thomas M. Royal and C. P. H. Schoelkopf.

The Adirondack Bag and Paper Co., Inc., of New York, has leased a three-story plant in Cohoes and will open the plant for the manufacture of bags for all uses.

NEW YORK CITY NEWS

Graustein Heads Continental

Directors of the Continental Paper and Bag Mills Corp. at a meeting in New York on March 27, elected A. R. Graustein president, H. A. Sheesley vice president and general manager, Owen Shepherd vice president and treasurer, and E. G. Sagendorff secretary. Mr. Graustein, who is chairman of the board of the International Paper Co., has been a member of the Board of Directors of the Continental for some time.

The stockholders of the Continental Paper and Bag Mills at their meeting on the same day voted to increase the Board of Directors from eight to nine members and elected the following: A. R. Graustein, Herman Elsas, I. Puhe, Allen Curtis, Murray W. Dodge, B. A. Tompkins, H. A. Sheesley, H. R. Weaver and Owen Shepherd.

Eastwood Manufacturing Co. Sold

Colonel E. C. Carrington on March 7 announced the purchase of the Eastwood Manufacturing Co. of Belleville, N. J., manufacturer of paper machine wires and other wire products, for a sum in excess of $2,000,000. George E. Edmunds is associated with Colonel Carrington in the purchase and will become president of the company. C. H. Neally, who owned the controlling interest, will be chairman of the board, Colonel Carrington will be vice president, and George Coffing Warner treasurer. No other changes in personnel are contemplated, and the policy of the company will remain the same.

International Makes Record

According to an announcement issued from the New York headquarters of the International Paper Co., that company established a new high record of paper and pulp production during 1927. The mills of the I. P. Company manufactured a total of 833,633 tons of paper and pulp of various kinds last year, as compared with 740,172 tons in 1926, the increase amounting to about 12.6 per cent. The output of all grades of paper last year amounted to 702,105 tons, a gain of about 15.5 per cent over the 607,630 tons produced in 1926, while the pulp manufactured for outside sale was slightly lower, totaling 131,528 tons, against 132,542 tons in 1926.

The Robert Gair Co., manufacturer of paper board and boxes, with principal offices in New York and mills and branch offices at several places through the country, made a net profit of $1,003,424 after interest, federal taxes and depreciation during 1927, equal after preferred dividends to $1.60 a share earned on 473,468 shares of no par common stock, compared with $1,027,235 or $1.67 a share in 1926.

The Henry F. Lindenmeyr Sons Co., one of the oldest, largest and best known paper jobbing houses in Greater New York, now at 32 Bleecker St., has leased from plans 56,000 square feet in the Green Industrial Building, under construction at Hudson and Canal streets, New York. This company was established in 1859 and Fritz Lindenmeyr, president, is the third generation to conduct the business. It is one of the last big paper houses to leave the East Side, a movement resulting from the printing houses establishing themselves in the Holland Tunnel Zone during the last two years.

Richard J. Cullen has been elected a vice president of the International Paper Co., of New Yorok, according to announcement. Mr. Cullen has charge of the three southern kraft paper mills of the company at Bastrop, La., and Camden, Ark. With the starting of the Camden mill, the I. P. Company claims to be the largest manufacturer of kraft paper on the North American Continent.

A new paper concern, under the name of the Bertram Blake Paper Co., Inc., has been organized and established by Bertram Blake, formerly vice president and sales manager of Marquardt, Blake & Decker, Inc. The new company, which is incorporated under New York State laws with a capital of $150,000, has leased quarters at 225 Varick St., New York. It will handle chiefly high grade papers, bonds, ledgers, cover and book papers, and has made some excellent mill connections.

Frederick M. Countiss, formerly with the Martin Cantine Co., has joined the sales staff of the International Paper Co. of New York. Mr. Countiss, it is announced, will handle the finer grades of bleached papers.

Charles Peto, formerly with the Lasher & Lathrop Paper Co. of New York, has joined the New York office of the Hammermill Paper Co. as assistant to Roger B. Taft, manager. Mr. Peto, who is well known to the metropolitan trade, will assist Mr. Taft in New York and eastern territory.

The Crosby Paper Stock Co. of New York City, was incorporated a few days ago under New York State laws with a capital of $10,000 to deal in paper manufacturers' supplies. The new corporation is represented by Samuel D. Spector, of 2 Lafayette street, New York.

National Waste Material Dealers Meet

Henry Lissberger of the Federated Metals Corporation, New York, was elected president of the National Association of Waste Material Dealers, Inc., succeeding G. H. Rady, of the E. J. Keller Company, Inc., New York, dealers in and importers of paper mill supplies, who had served two terms as head of the association, at the fifteenth annual meeting of that organization in the Hotel Astor, New York, on February 20 and 21. Carlton B. Overton, of Castle & Overton, Inc., New York, was elected vice president.

The convention of the waste material dealers was largely attended by waste merchants, including many of the prominent suppliers of raw material to paper mills, from various parts of the country. At the fifteenth annual banquet of the association on the evening of March 21 in the Grand Ballroom of the Hotel Astor, United States Senator Walter F. George of Georgia was the principal speaker. More than 500 were present at the dinner.

The consolidation of the Brooklyn Fibre Syndicate, Inc., with the Tioga Paper Goods Co. Inc., of New York, is announced, and the consolidated companies will operate under the name of the Tioga Paper Goods Co., Inc., with offices at 576 Broadway, New York.

Charles E. Weyand & Co., Inc., long-established and widely-known manufacturers of fine stationery in New York City, have filed notice of an increase in capital from 100 to 1,500 shares of no par stock.

The firm of William Hughes & Co., Inc., among the oldest established and best known concerns in the country dealing

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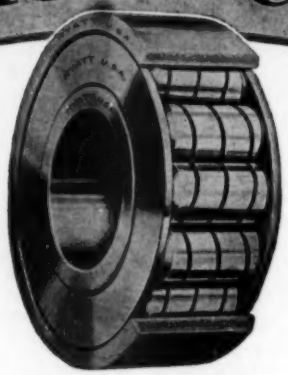

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in papermakers' supplies, of 516 Fifth avenue, New York, has been petitioned in involuntary bankruptcy by a group of creditors. Liabilities are estimated at about $100,000, although there is a large list of creditors with claims aggregating in excess of $200,000, some of which probably are secured. No statement has been made concerning the company's assets, but they are believed to be very small. Judge Thacher appointed John M. Cashin receiver for the alleged bankrupt firm, under bond of $1,500.

MICHIGAN NEWS

Kalamazoo Men Meet Macdonald

The Paper Technologists' Club of Kalamazoo tendered an informal dinner to R. G. Macdonald, secretary of T. A. P. P. I., on Friday evening, March 30, at the Park-American Hotel.

Ivar Lundbeck, the club president, introduced Mr. Macdonald, who outlined the program of the association for the coming year and indicated some of the ways in which the Technical Association could be of value to its members and to other technical men in the industry. It was pointed out that one of the reasons for the continued high success and prestige of T. A. P. P. I. was the self-generated interest of its members who participate in its committee work because they are interested in accomplishing things that will be of permanent value to the industry and incidentally to themselves.

Following Mr. Macdonald's talk each member was given a sealed envelope containing a written subject of topic for a three-minute address. The subjects included opinions regarding conventions, mill experience, etc., and in each instance led to considerable enjoyable discussion by all present.

W. J. Lawrence, Harry Bradford and Alex W. Macvie gave some interesting reminiscences of the early days of T. A. P. P. I. and of the fall meeting which was held in Kalamazoo, May 10, 1916. The high standing of T. A. P. P. I. and the improved status of the technical man in the industry were attributed largely to the objective of the industry to secure quality and uniformity in its product rather than maximum production alone.

Among those present at the dinner were Ivar Lundbeck, Lee Paper Company; Harry Bradford and Herbert Davy, Rex Paper Company; Alex W. Macvie and Norman Bardeen, Lee Paper Company; F. D. Libby and Mr. McHolmes, Kalamazoo Vegetable Parchment Company; C. C. Schneider, Hawthorne Paper Company; W. K. Kidder, Allied Paper Mills; W. J. Lawrence, Arthur Dreshfield, E. J. Turner and Mr. Van Cox, of the Western Paper Makers Chemical Company; E. Frank Whittington, Standard Paper Company; Elbert G. Milham, Bryant Paper Company; Charles B. Barton, Jr., Michigan Paper Company, and V. Heinmuller, Kalbfleisch Corporation.

Two papers were presented at the March 23rd meeting of the Cost and Technical Association of the Paper Industry. Arthur Fitzgerald of the purchasing department of the Kalamazoo Vegetable Parchment Co., spoke on "Buying," and Charles Barton, with the chemical department of the Michigan Paper Co., read a paper on "Converting Old Papers."

Changes in Watervliet Personnel

A number of changes have taken place in the personnel of the Watervliet Paper Co., Watervliet.

George K. Ferguson has been made assistant secretary, thus relieving Secretary Frank Gilchrist of many duties.

Alfred Bryant, formerly superintendent of the Milham Division of the Bryant Paper Co., has been made superintendent of the plant.

B. C. Hope, of Grand Rapids, has succeeded Clarence O. Thorne as superintendent of construction. Mr. Thorne has been with the company for 15 years, and is well known in the Valley.

Clarence L. Harter has been advanced from superintendent of the book division to general superintendent of the plant.

This company's expansion program is nearing completion. The second paper machine is now being operated two eight-hour shifts daily and is making a satisfactory showing. It will be put on a 24-hour run in the near future, and when operating at full capacity, will more than double the original output of the plant.

Reforestation By Paper Mill

Reforestation in Michigan has received encouragement with the announcement from Washington that the Government has approved the purchase of 400,000 additional acres in the Upper Peninsula as additions to the federal forests already established there.

An important step in the movement by privately owned enterprises, may develop through plans of the Manistique Pulp and Paper Company. This company desires to expand its business, but to do so, must have at least 35 years supply of pulpwood in sight. To make this possible, it plans to purchase about 2,000 acres of land each year to be planted in trees. The matter has been taken up with the Conservation Commission, which body has asked for more detailed plans, and promises all possible State co-operation in the enterprise.

R. A. Hayward Talks to Superintendents

R. A. Hayward of the Kalamazoo Vegetable Parchment Co. was the speaker of the evening at the March meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Ass'n held at the Park American Hotel, Kalamazoo, March 15th. Mr. Hayward told how it was necessary to be on the toes to watch for opportunities to cut corners and take advantage of every possible way to reduce costs. The big modern machines make paper so much faster and competition is so much keener than it ever was before, that the man who makes a success today is the one who takes advantage of every opportunity to cut corners. Following Mr. Hayward's talk, there was a round-table talk on various subjects.

Mr. Fulton of the Fulton Engineering Co. of Middletown, Ohio, will be the speaker at the next meeting, April 19.

K. V. P. to Build Addition

Bids will son be taken for the erection of the large factory addition to the plant of the Kalamazoo Vegetable Parchment Co. The structure, which will contain over 100,000 sq. ft. of floor space, will be two stories and basement and will match in every way the high type of construction employed in the erection of mill No. 2. The exterior will be in faced brick, with an interior of finished reinforced concrete.

The construction of this building is made necessary by the installation of machine No. 2, which will about double the output of the plant. The building will be used for converting the raw stock from the two machines into the various products in which Parchment specializes. Billingham and Cobb are the architects.

The O. F. Miller Co. holding the contract for erection of Parchment's new office building, is progressing steadily with the work. The foundations are in and good progress is being made on the building.

Thomas J. Abraham, 73, former night watchman for the Kalamazoo Paper Co., and for 55 years a resident of Kalamazoo, died at his home. Previous to his employ in the Kalamazoo Paper Co., he was for 13 years in the employ of the Bryant Paper Co.

Wax Paper Water Remover Patented

Ralph A. Hayward, general manager of the Kalamazoo Vegetable Parchment Company, has been granted a patent on a device to remove the water from waxed paper. Under the present system, the newly waxed paper is plunged into a bath of ice cold water, hardening the wax. The Hayward device, a series of blower heads, attached to a blower, re-

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moves this water immediately, without interfering with the wax surface. The patent is assigned to the Kalamazoo Vegetable Parchment Co.

Eddy Paper Corp. Will Retire Bonds

The Eddy Paper Corp., Three Rivers and White Pigeon, shows a net profit of $317,748.40 for the year ending December 31, 1927, according to the financial statement just sent to stockholders. Depreciation on the plant is figured at $367,114.46 and Federal and State income taxes amount to $53,600. Sales for the last year were $6,293,285.63. It is announced that May 1, the Eddy Paper Co. will retire $875,000 of outstanding bonds.

Edward Gearheart, 18, of Kalamazoo, is in Old Borgess hospital with deep burns of the neck and both arms caused by an explosion at the Sutherland Paper Co., March 14.

Twenty students from the engineering department of the University of Detroit, recently visited the King division of the Allied Paper Mills, Kalamazoo. They were shown through the plant and the processes of papermaking were explained. This group of students is making a study of many industries in Michigan.

John Neville, superintendent of the Three Rivers division of the Eddy Paper Co., has resigned.

John D. Wagner, 77, formerly president of the Michigan Paper Co., died March 30, after a brief illness.

Joseph C. Widneyer, for 15 years with the Watervliet Paper Co., has accepted a position with the Allied Paper Mills of Kalamazoo.

Jacob Kuss, former superintendent of the Coating Division of the Watervliet Paper Co., has accepted a similar position with the Coating Division of the Michigan Paper Co. This division was formerly known as the Bradford Paper Company of Kalamazoo.

WISCONSIN NEWS

Wisconsin Mills Appeal to I. C. C.

Freight rate changes which appear discriminatory to Wisconsin paper mills are the object of appeals which have been filed with the Interstate Commerce Commission in an effort to stop their announcement and enforcement.

One brief opposes attempts of Northern New York paper manufacturers to obtain lower rates on newsprint and wrapping paper. Wisconsin mills contend that this move may mean a new rate structure for the middle west, with a resultant inequality that will give them unwarranted competition in their logical market, the central west.

Another issue is a proposed increase in freight rates from the Wisconsin territory on paper napkins shipped to points in the southwest. Tariffs announced for publication by the Interstate Commerce Commission on April 1 and effective May 16 would shut out Wisconsin mills from competition with Atlantic Seaboard and Pacific coast mills, it is contended. The ruling would prohibit the shipment of napkins in mixed cars with towels and other products without paying full class rates.

Rates on wrapping paper shipped from Green Bay, Wis., to Indianapolis, Ind., will be reduced from 34 cents to 29.5 cents, and those on napkins from 38 cents to 31.5 cents if recommendations of examiners of the Interstate Commerce Commission are adopted. The change came about when Indianapolis jobbers complained that rates from Green Bay to St. Louis and Illinois points were lower.

Operation for 724 days without a lost time accident is the record achieved by the Falls Manufacturing Co., of Oconto Falls, Wis. A run of 75 no-accident days at the Fort Howard Paper Co., of Green Bay, ended with injury to a workman employed in the boiler room.

Until such time as the Northern States Power Co. has its permit for construction of the Wissota dam at Chippewa Falls, Wis., revoked, the Wisconsin Railroad Commission refuses to fix a valuation of the project. The major portion of the power plant has been built for some time, but the Wisconsin commission contends federal authorities have no jurisdiction and want the permit cancelled and consideration given one by the state. The Wisconsin Power and Light Co. found itself in a similar situation with respect to a dam built on the Wolf river near Shawano, Wis., and has had its federal permit cancelled.

George D. Nau, of Green Bay, Wis., treasurer of the Hoberg Paper and Fibre Co., died March 27, 1928. He founded the Nau Tug Line, which does extensive shipping of pulpwood, and was prominent in banking circles. Mr. Nau also was interested in the Northern Paper Mills and the Green Bay Paper and Fiber Co.

Several important speakers have appeared before the Foremen's Safety School at Appleton, Wis. A. Scott Dowd, editor of The Paper Industry, spoke of proper relations between foremen and workers as an important safety factor, especially if the men could do their own thinking and would act voluntarily instead of being given orders. Prof. S. Clark Hull, of the University of Wisconsin, stressed the scientific measures which will bring added safety, especially physical and mental examinations of workers before being employed. Praise for the safety leadership exhibited by Wisconsin paper mills was given by Fred M. Wilcox, chairman of the Wisconsin Industrial Commission.

If an investigation now under way proves that a change is warranted, the Consolidated Water Power and Paper Co., Wisconsin Rapids, will change its main mill over from newsprint to higher grades, especially book paper. Canadian competition has made this step seem feasible and George W. Mead, president, is giving the idea his careful consideration. The company is producing 250 tons of newsprint a day on its machines at the new Thunder Bay Paper Company mill at Port Arthur, Ont., and expects to supply its customers largely from there at the advantages afforded by a Canadian location. Consolidated mills produced 142,000 tons of paper and pulp valued at $10,000,000 during 1927, and expects to consume 260,000 cords of spruce and 50,000 of hemlock in its 1928 production.

Construction of a new power house soon will be under way at the Bergstrom Paper Co., Neenah. One unit 50 by 110 feet in size will house three new boilers. Another unit 50 feet square will contain turbines of 2,500 k. w. capacity.

One of the biggest improvements announced so far this year in the state is the erection of a new digester plant costing $350,000 for the Interlake Pulp and Paper Company, of Appleton, Wis., a branch of the Consolidated Water Power and Paper Co. Excavation will start at once for an attractively designed building of concrete, brick and steel 60 by 180 feet in size and 90 feet high. Nine tanks for the new digesters have been ordered from Biggs Boiler Works Co., Akron, Ohio. Capacity of the new plant will be 95 tons of pulp a day.

Green Bay closed its foremen's safety school in March after a successful year. Nearly 300 foremen received certificates for completing the course. The speaker at the closing banquet was D. D. Fennell, safety engineer, of Chicago.

O. W. Young, formerly located with the Western Division sales office of the Hyatt Roller Bearing Co., has been appointed chief engineer and takes up his new duties at the company headquarters in Newark, N. J.

A Good Slogan for 1928

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Canadian News

Production of Newsprint

Newsprint production in Canada in February kept up the encouraging record shown in January. Total output was 189,822 tons as compared with 150,773 for February of last year, a gain of over 39,000 tons. During the first two months of the present year the Canadian mills produced 63,961 tons more than in the first two months of 1927, an increase of 20 per cent. On the other hand, production in the United States in February amounted to 112,302 tons. For the first two months of 1928 United States output showed a decrease of 23,521 tons, or 9 per cent as compared with the first two months of 1927.

Though Canadian production was higher in February than in January, the mills were operating at only 86.3 per cent of rated capacity, compared with 88 per cent in January, which was due to additional machines coming into production. This percentage, however, is higher than for a good portion of 1927, and will be considered quite satisfactory under present conditions.

Yearly Reports for Industry Favorable

The fiscal year of a large number of pulp and papermaking companies finishes with the calendar year, and their financial reports are generally published a couple of months later, so that March generally furnishes a good indication of the position of the industry.

The reports issued last month show that, in spite of the large excess of producing capacity over consumption, the newsprint industry is in a sound position, and as long as the situation is handled as ably as it is at present little fear need be entertained for its future.

As a result of the representations made to the Hon. James A. Robb, Minister of Finance at Ottawa, by the Book and Writing Section of the Canadian Pulp and Paper Association, the item providing a drawback of 80 per cent on certain printing papers imported into Canada for use exclusively in the production of magazines and periodicals has been amended and now provides that "No drawback shall be paid under this item on trade journals, supplements of newspapers, publications devoted to the private interest of the publisher, or association publications, or publications devoted to the enterprise of the publisher, but not to exclude publications devoted primarily to agriculture."

QUEBEC

Good Increase in Brompton Profits

For the year ended December 31st, 1927, the annual financial statement of Brompton Pulp and Paper Co. shows earnings at the best level since 1923. Sale of the Groveton Paper Co., a Brompton subsidiary, last year means that 1927 results were obtained from the operations of two companies, Brompton and Claremont, another subsidiary, as against the three units in 1926. The current report is changed from the form used in previous ones; thus, while the profit and loss account is consolidated, allowing comparison with previous years, separate balance sheets are shown for Brompton and Claremont, thus giving a clearer picture of the situation but rendering impossible comparison with the balance sheet figures of the preceding years.

Operating profits for 1927 amounted to $1,545,130, as against $1,240,954 in 1926 and $1,321,065 in 1925. After an unusually large write-off for depreciation and deduction of bond interest and preferred dividends, there remained $524,131 earned on the common stock, esuivalent to $3.74 per share, the corresponding figures for 1926 and 1925 being $490,014 and $3.50, and $589,206 and $4.20, respectively.

Marked Expansion by Port Alfred

The report of Port Alfred Pulp and Paper Corp. for the year 1927 shows a very marked gain in operating profits, as these rose from $1,260,929 for 1926 to $2,266,365 for 1927. The gain was even greater, as one year ago general expenses of $119,989 had to be deducted, leaving net operating profits $1,140,940, making the gain for 1927 $1,125,425, or close to 100 per cent. After allowances for interest and depreciation and also for preferred dividends there remained a balance available for common dividends (before taxes) of $816,392, equal to $6.80 earned per share on the 120,000 shares of common stock outstanding. As one year ago the earnings amounted to only $2.30 per share, 1927 saw the common stock placed in a position, so far as earning power was concerned, practically three times better than in 1926. This is an unusual improvement, particularly when it is considered that under the conditions imposed on the company during the past year its output averaged considerably below two-thirds of its capacity.

During the year, Port Alfred, in association with Price Bros., acquired the undertakings of Quebec Pulp and Paper Mills, the half-interest therein being acquired for $1,500,000. In addition to groundwood mills the company thus also acquired a valuable interest in timber rights and water powers through the transaction.

Fine Showing by St. Maurice Valley Corporation

The second annual report of the St. Maurice Valley Corporation for the year ended December 31, 1927, shows earnings equal to $6.36 per share on the company's 160,000 no par value common shares outstanding at the end of the year. This compares with $8.47 per share on the common for the preceding thirteen-month period. Gross profits for the year are shown at $4,689,673, as compared with $4,735,856 in the preceding thirteen-month period. After deductions for interest, depreciation, preferred dividends, and common dividends on the Belgo-Canadian minority common stock, there was left $1,017,766 as a surplus for the year, which was carried over to profit and loss account.

The construction work carried out in 1926 at the Shawinigan Falls mill was permanently financed last year by the issue of 5.5 per cent bonds and 7 per cent preferred stock. During the year the corporation added to its timber reserves by the purchase of the Les Escoumains limits, estimated to contain 1,500,000 cords of pulp wood. The board of directors also earnestly recommended acceptance by the shareholders of the offer to exchange each share of St. Maurice Valley Corp. for two and a half shares of no par value common shares of the new Canada Power and Paper Corp., the holding company for St. Maurice Valley Corp. and Laurentide Co.

A reconstruction program involving a large expenditure is being carried out at the Canada Paper Co.'s plant at Windsor Mills, the objects being to increase the efficiency of the equipment, increase the production, improve the grades and widen the company's markets. No new machines are being added to the mill, which already contains four, but various other changes are being carried out. The company is controlled by the newly formed Canada Power and Paper Co.

Construction work on a power plant to develop a minimum of 12,000 horsepower at Chats Falls, on the Quebec side of the Ottawa River about 30 miles west of Ottawa, has to commence this year, or the Quebec Government intends to cancel a lease to the Chats Falls Power Co., and the power

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RYTHER CABLE CONVEYORS are constructed to carry either two foot or four foot pulpwood. The construction can be of timber or structural steel. The machine parts are extra heavy and designed for maximum capacities. The standard design is flexible and can be combined to meet all storage and reclaiming conditions.

FOR CANADA REFER

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may then become available for purchase by the Nesbitt-Thomson interests, for subsidiary interests of the Canadian International Paper Co.

The new mills of the Lake St. John Power and Paper Co., at Dolbeau, is now in full operation. The first 245-inch paper machine was started about the middle of December, while the second one began making paper on the first day of last month. This mill, which is under the management of John Stadler, has contracted to sell its whole output to the Hearst interests, of New York, for a period of ten years.

Franquelin Assets to be Auctioned

It has been announced that the properties and assets of the Franquelin Lumber and Pulpwood Co., Ltd., will be auctioned at Osgoode Hall, Toronto, on the 25th of June next. These assets consist of a 15,000-acre tract on the upper basin of the Sheldrake River (in the Saguenay district) containing about 100,000 cords of pulpwood, cutting rights on a 125-square mile tract in the vicinity of the Franquelin River estimated to contain about 500,000 cords of pulpwood, a hydro-electric power plant and a pulpwood handling plant including breakwaters, conveyors, booms, jack ladder equipment, barker drum house, etc.

The conditions of sale provide that the purchaser shall, at the time of the sale, deliver a check accepted by a chartered bank of Canada, for $75,000, and shall pay the balance of the purchase money to the liquidator on or before August 1, 1928.

Another Step to Preserve the Forests

Another step, and one believed to be of widespread nature as regards the future, in the matter of forest preservation is provided for in a measure brought down by Hon. Honoré Mercier, Minister of Lands and Forests, before the Quebec Legislature. For the past four years, approximately all leases of Crown forest areas have provided that only 80 per cent of the annual growth may be cut. The Minister now goes further and takes in all holders of timber leases. At the 1927 session of the Legislature, the policy was laid down by the Government that no more mills would be encouraged to locate in the province, beyond those then provided for, the announced purpose being to guarantee a supply of wood in perpetuity to existing mill. The additional restriction of 80 per cent cut of the annual growth follows in the same direction.

The question of what forestry reserves exist in the province has been much discussed, and to aid in determining this matter Hon. Mr. Mercier has added a clause in the law to the effect that "all timber limits under leases shall be inventoried within a period not exceeding twenty-four months after the date of the lease, by a member in good standing of the Association of Forest Engineers of the Province of Quebec, and no cutting or forest operations shall be done on such limits until a working plan based on the inventory above prescribed has been approved by the Lieutenant-Governor-in-Council."

The Quebec Legislature, by an overwhelming majority, has granted the necessary rights to the Beauharnois Light Heat and Power Co. to proceed with its project for the development of power on the St. Lawrence River a few miles West of Montreal, which was outlined in these columns last month. The company has now made applications to the Federal Government for the right to develop power under the charter granted by the Quebec Legislature. Preliminary plans have been submitted to the Departments of Public Works and Railways and Canals at Ottawa. The proposals of the company will receive the consideration of the Government in due course according to a statement made in the House of Commons. The plan is the most ambitious power-development scheme yet put afoot in Canada, involving the ultimate development of some 2,000,000 horse-power.

Approval has been given in the Quebec Legislature to a bill of the Association of Forestry Engineers, to compel all engineers practicing forestry to become members of the professional organization. This gives an official title and status to a number of engineers who devote their entire time to forestry matters, and offers an opportunity of embracing in a professional status those who have served the necessary apprenticeship and have the necessary educational qualifications to take up forestry, as apart from all other branches of the engineering profession.

Paugan Falls Dam Closed

Another page was written last month in the history of the development of the Gatineau River for industrial purposes and of the expansion of Canadian International Paper Co. when the huge gates of the Paugan Falls dam were closed on the 23rd of last month.

It took just fifteen minutes for the two jaws, each weighing 65 tons, to close, sliding into position at the rate of one foot per minute. This closed the last gap in the 800-foot dam, and work was immediately begun on filling in behind the gates with concrete, thus making the dam a long unbroken wall holding back the Gatineau River flow. The level of the river at this point was thus raised about 110 feet (from level 350 to level 460 to 464), and a series of eight falls and rapids which formerly tumbled a turbulent way downstream between rocky gorges has been replaced by a placid lake extending some twenty miles back and up to nearly one mile in width. The power plant at this site will ultimately develop 272,000 horse-power.

Swedish Woodpulp to Pass Through Canada

Swedish woodpulp, the importation of which has been given every encouragement by the Montreal Harbor Commissioners as potential westbound freight of some magnitude, will be landed there this coming season in much larger quantities than ever before. Doscher, Bendix and Co., of New York, who are steamship agents, ship brokers and forwarding agents particularly interested in the importation of woodpulp and paper stock, have decided to incorporate a Canadian subsidiary of their company under federal letters patent, and will open an office in Montreal in the near future.

V. B. Bendix recently had an interview with the Montreal Harbor Commissioners and stated that he had been assured of adequate wharfage space on which to discharge the 68,000 tons of Swedish woodpulp that his firm intends to import this season. The product of Swedish mills has been passing through Montreal, en route for United States points, for the last four years, but up till 1927 in no considerable quantity. Last year some 19,000 tons were trans-shipped here, but the possibilities of expanding the trade to a point where between 200,000 and 300,000 tons may be brought in are very bright.

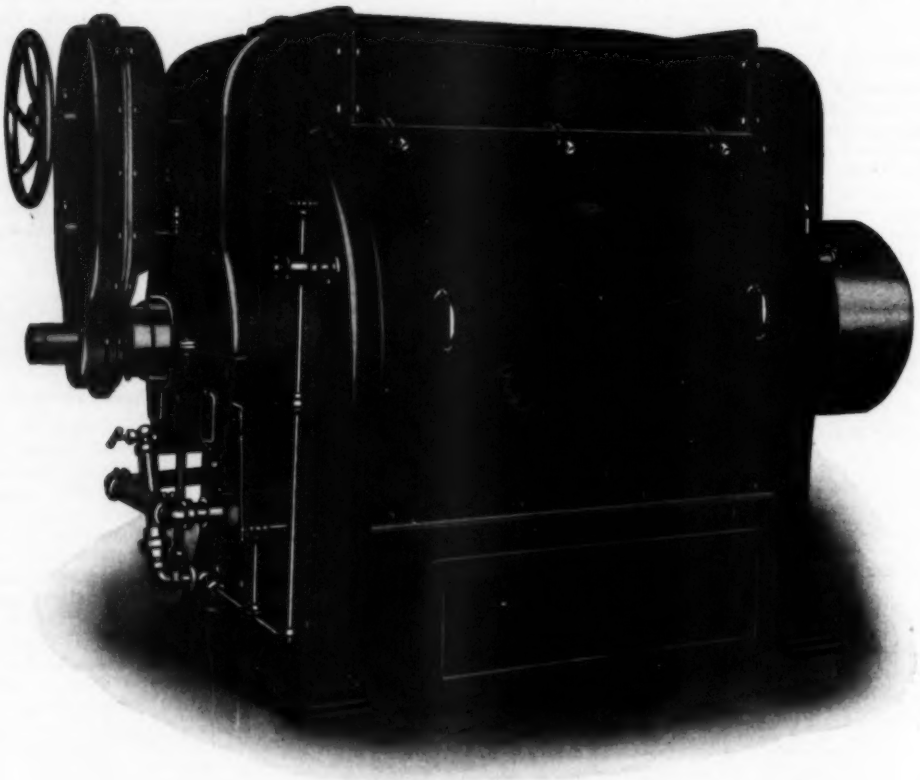
Through the co-operation of the Montreal Harbor Commission and the Montreal Board of Trade, the potentialities of the St. Lawrence route have been placed before a large number of woodpulp and paper stock importers in the Middle States, who have been receiving their supplies through U. S. Atlantic ports, but with the right of specifying the routing. It has been pointed out by these two organizations that considerable saving in freight charges would result from the shipment of such commodities through the Port of Montreal for furtherance either by the all-water, or rail and water routes inland from that port.

Canadian Vickers, Ltd., are at the present time building two vessels for the Donnaconna Pulp and Paper Corp. to be used for pulpwood transportation. The power for these vessels will be generated by two 80-horsepower Kromhout oil engines, which are being built in Holland. They will have flat hulls, and the four hatches will be 18 feet by 14 feet, the deckhouse being in the rear. The dimensions of these craft are 145 feet 1 inch, overall, breadth 30 feet and moulded depth 10 feet.

A new automatic stock regulator has recently been completed by August Kolitsch, machine tender with the Port Alfred Pulp and Paper Corp. Permission for its installation was given by Superintendent Krockenberg and the device is now in actual operation there on No. 3 paper machine. The

REED-SPAFFORD PULP SCREEN

(Built in two sizes)



The REED-SPAFFORD PULP SCREEN is remarkably efficient. Its capacity is large and its power consumption is surprisingly low. Let us show you what a saving this screen means to you.

Our Paper and Pulp Machinery is CONSTANTLY IMPROVED

Improved Paper Machinery Co.

Nashua, N. H., U. S. A.

SHERBROOKE MACHINERY CO., Limited

Sherbrooke, Quebec, Canada

trial results have been most satisfactory, and its success is considered assured.

Holt-Gundy Purchase Howard Smith Paper Mills

Still another step toward the further consolidation of the Canadian Pulp and paper industry was carried out on March 30 when Howard Smith, president, and Harold Crabtree, vice-president, of Howard Smith Paper Mills, Ltd., were offered $150 per share for all of the common stock of the company by the Montreal investment firm of Holt, Gundy & Co. The officials, who are the largest holders of the stock, accepted, and Mr. Smith has stated that he and Mr. Crabtree would recommend the acceptance of the offer to their shareholders. Letters will go forward shortly to shareholders from Holt, Gundy & Co., making the offer to them, and from Mr. Smith and Mr. Crabtree, recommending acceptance.

While Canada Power and Paper Co. represents the Canadian pulp and paper interests of Sir Herbert Holt, H. J. Gundy and their associates, it is not believed that the Howard Smith deal will be carried out through this company, although it seems obvious that the purchase has been made with a view to further rounding out the big new enterprise which has made such strides in the past two years. Canada Paper Co. is already included in the Holt-Gundy group, and Howard Smith will augment Canada Power and Paper Co.'s fine paper productive capacity and will bring into the enterprise some very valuable limits, which now seem to be the keystone of the paper situation.

The company owns and operates four pulp and paper mills: a 20-ton tub-sized and loft-dried paper mill at Beauharnois, Que., a 40-ton book and writing paper mill at Crabtree, Que., a 60-ton bleached sulphite and paper mill at Cornwall, Ont., and a soda pulp mill (operated under the name of Canadian Cellulose Co.) also at Cornwall. The company's record since 1920 has been one of steadily increasing earnings, while in the past two years big strides have been made in improving the financial position.

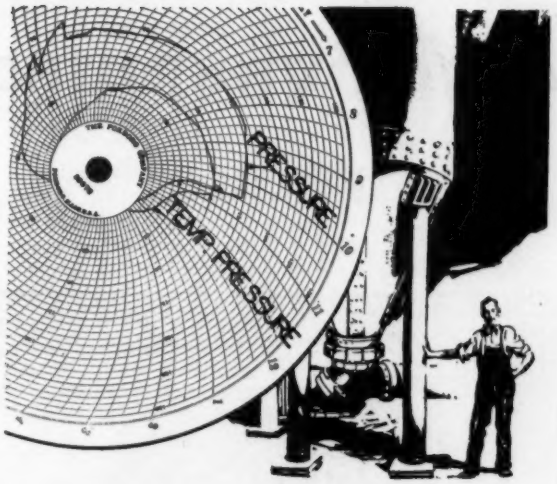
ONTARIO

Abitibi Shows $11.33 Per Share

For the year ended December 31, 1927, the financial statement of the Abitibi Power and Paper Co. shows earnings equal to $11.33 per share on the company's common stock, as compared with $11.56 in 1926 and $11.19 in 1925. The exhibit is a particularly strong one, with a number of important changes shown in the balance sheet. Operating profits for the year amounted to $4,213,489, this after income tax, as compared with $4,254,594 before income tax in the preceding year. Deduction of interest at $762,493 and depreciation at $546,422 left net profits of $2,904,574, as compared with $2,961,995 in 1926. Preferred dividends paid amounting to $70,000 and common dividends at $1,250,000 left a surplus for the year of $1,584,574, compared with $1,829,495 in the preceding year when $1,062,500 was paid out in common dividends. Working capital position shows an improvement, with excess of current assets over current liabilities standing at $3,761,489, as compared with $3,132,610 at the end of the preceding year.

The president, Alexander Smith, in the course of his remarks, states that on account of market conditions, production and sales were materially reduced as compared with the preceding year. He also points out that on January 1, 1928, the company acquired through common stock purchase the controlling ownership in Spanish River Pulp and Paper Mills, Fort William Paper Co., Manitoba Paper Co., Ste. Anne Paper Co. and Murray Bay Paper Co.

Profits of Provincial Paper, Ltd., (the company which took over Provincial Paper Mills, Ltd.,), for the eight months ended December 31, 1927, amounted to $774,123. This compared with the profits of $1,224,480 for the old company for



FOXBORO on Your Digester

Means Worry Off Your Mind

WHEN you have digester temperature and pressure recorded on the same chart you not only get rid of the nuisance of plotting curves for each cook, but digester control is made simpler and more certain.

The two-pen records instantly record variations, however slight. This is an added incentive for care in operation and an added protection from spoiled or irregular stock.

Foxboro Instruments not only record temperature, flow, humidity or pressure of liquids or gases, but they can also control a process absolutely. Put a Foxboro Controller in command and uncertainty is gone for all time. That is why you will find them held in such high regard by leaders in the paper industry.

Foxboro Controlling and Recording Instruments are sold under a seal which in plain English means that the instrument must do the work that it is designed for without any excuses, alibis or "ifs." Our past experience in paper manufacturing processes makes us willing to stake our reputation on the performance of Foxboro. Can you afford to experiment when certainty of results is so easily available?

THE FOXBORO COMPANY

Neponset Avenue, Foxboro, Mass., U.S.A.

NEW YORK · CHICAGO · BOSTON · PHILADELPHIA · DETROIT
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FOXBORO
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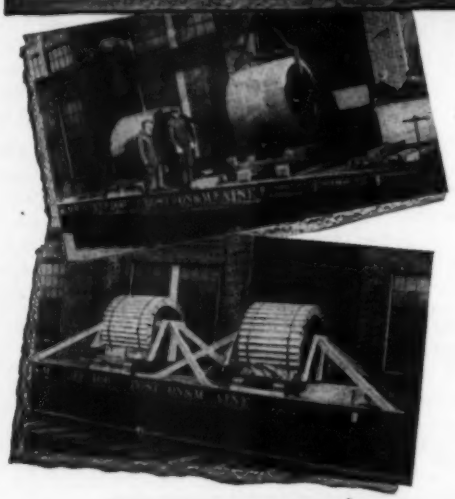
THE COMPASS OF INDUSTRY

INSTRUMENTS FOR CONTROLLING, RECORDING AND INDICATING TEMPERATURE, FLOW, HUMIDITY AND PRESSURE.

A Manufactured Product



Continuous operation in the production of ground-wood is economy. Tie-ups, because of the necessity of changing pulp stones, mean losses never to be regained. The Norton Pulp Stone has proven in actual performance reliability not limited by weeks or months, but carrying on into years.

Norton Company

Worcester, Mass., U. S. A.

Canadian Trade now supplied from Canadian Plant

NORTON
PULP STONES

the twelve months ended December 31, 1926. The balance sheet indicates a good liquid position, the ratio of quick assets to current liabilities being slightly better than four and a half to one.

Hon. Charles Stewart, Minister of the Interior in the Federal Government, has brought down a bill to ratify the agreement between the Dominion Government and the governments of Ontario and Manitoba for the construction of a dam at Low Ear Falls, near Lac Seul. Under the agreement the Dominion assumes three-fifths of the capital cost of the dam, estimated at $700,000.

Construction of the first machine for the Great Lakes Pulp and Paper Co. has been completed by the Bagley and Sewall Co., of Watertown, N. Y. Most of the machine has already been shipped to the mill at Fort William, and Richard Gray, of Watertown, has gone to the mill to supervise its erection. The machine is 264 inches wide and is designed to run at a speed of 1200 feet a minute. It is expected production of paper will start about June 1st.

Hon. William Finlayson, Minister of Lands and Forests, recently introduced in the Ontario Legislature a measure to authorize him to fix the size and kind of trees and timber which may be cut on the unpatented public lands in Ontario, and on patented lands where trees and timber remain the property of the Crown, notwithstanding permission vested in any timber license, lease or other document granting rights to cut timber.

Port Arthur Mill Celebrates Tenth Anniversary

Arthur G. Pounsford, manager of the Port Arthur Division of Provincial Paper, Ltd., was host recently to a number of the original employees of the firm at the Prince Arthur Hotel. It was the occasion of the tenth anniversary of the first cook of sulphite pulp at the Port Arthur mill, which then belonged to the Port Arthur Pulp and Paper Co. In an interesting address Mr. Pounsford recalled that the staff at the mill ten years ago comprised 170 men, of whom 51 were still in the company's employ, though a large proportion of these had been transferred from their original work to other branches during the passed few years.

Mr. Pounsford expressed pleasure in finding so many of the original crew still helping him to make the mill the continued success that it had been and voiced the hope that all would be present when the second decade anniversary is held. The manager expressed appreciation of the treatment accorded the company by the civic authorities at Port Arthur from the first day that A. G. Hinzke, superintendent of the plant, and he, had arrived in the city.

Building Products and St. Maurice New Subsidiary

Formation of a new company to be known as National Forest Products, Ltd., to be controlled jointly by Building Products, Ltd., and St. Maurice Valley Corp., was announced following the annual and special meetings of Building Products recently held in Montreal. It is understood that the new company will erect a plant in the vicinity of Three-Rivers and that the St. Maurice Valley Corp. will supply the raw material for making the various products, while Building Products will do the marketing for the new company. It is further understood that no new financing will be required in connection with the new company.

At the annual meeting of shareholders of Building Products, approval was given to a by-law increasing the number of directors from seven to nine. The new addition to the board are C. B. McNaught, recently appointed president of the British Empire Steel Corp., and Geo. M. McKee, operating head of St. Maurice Valley Corp. and president of Port Alfred Pulp and Paper Corp.

To those who heard and took part in the discussion of H. W. Cowan's paper at the annual meeting of the Technical Section of the Canadian Pulp and Paper Ass'n in January,

In 1925 a northern paper mill bought one Warren Stuff Pump. Its satisfactory operation and low cost of maintenance during the next two years led to the purchase of 10 more Warren Pumps.

The performance of these pumps, their low pumping cost and freedom from clogging resulted in a contract for 37 more pumps to go into their new Southern mill just completed.

Let us show you what Warren Pumps can save you when handling your particular kind of stock. Write for Bulletins.

WARREN

Warren

Steam Pump Company

Incorporated

Warren, Mass.

BRANCH OFFICES:

Atlanta, Boston, Charlotte, Cleveland, Dallas, Kansas City, New Orleans, New York, Oklahoma City, Philadelphia, Pittsburgh, St. Louis, St. Paul, San Francisco, Scranton, Seattle, Toronto

1712

OLIVERS

in an Arkansas Mill

This new Kraft Mill has:—
One Oliver Lime Mud Washer,
Four Oliver Kraft Pulp Deckers,
Two Oliver Save-Alls.

The Company owning this Mill has in addition twenty Olivers installed in, or on order for, its other Mills.

They have proved that
O L I V E R S
do the work.

See page 378 in the 1927 Paper and Pulp Mill Catalogue.

Oliver Continuous Filter Co.

San Francisco
802 Cunard Building
Oakland, Calif.
4th & Madison Sts.

New York
1547, 33 W. 42nd St.
Johannesburg, South Africa
E. L. Bateman, Locarno House

London
150 Southampton Row, W. C. 1
Honolulu, T. H.
W. A. Ramsay, Ltd.

it will be of interest to learn that the George Rathbone Lumber Co., of Toronto, are installing a drying system under Mr. Cowan's direction in their drying kilns. Under this new system of drying the wood, dampness is forced out by heat, and is then kept in circulation by fans. A thermostat automatically causes the release of the damp air when the temperature reaches a certain degree, when dry air is conducted into the kiln and the process is repeated.

Dryden May Go Out of Receivership

It is considered likely that arrangements will be made in the near future to lift the receivership from Dryden Paper Co. and place the enterprise on its own feet. Its revenues have been improving and at the present time it is understood that its earnings are over three times interest requirements on notes and debentures. A source of further profit has been opened up through the final conclusion of a contract between Dryden and the Bates Valve Bag Co., of Three-Rivers, Que., which will cover the use of Dryden kraft paper for the manufacture of bags over a period of five years.

The bag company is now operating at Three-Rivers, where it makes paper bags for holding cement. It has agreed to establish a plant near the Dryden mill. The contract will provide an outlet for Dryden of 2,000 tons of kraft paper during the first year, the amount increasing as business in the West expands, and the uses of the paper for cement containers and other purposes increases.

The necessity of reducing production at a number of Canadian newsprint mills that are included in the so-called pooling arrangement has also resulted in the operating costs of the plants being materially reduced. In the case of the Spanish River Pulp and Paper Mills, Ltd., it is learned that on an operating basis of 80 per cent of capacity, actual earnings are very close to what they were when the company was producing at a rate of 100 per cent. It is felt that with a return to more normal conditions the ratio of net profits on this account is likely to be very much greater than has ever been shown by the company. From now on it is believed the general market for newsprint is likely to exhibit much firmer conditions than was the case last year.

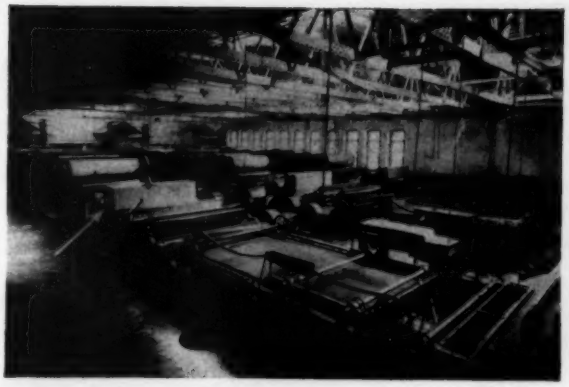
Lincoln Superintendent Goes with Little

A. E. H. Fair, who for the past six years has been superintendent of the Lybster Division of the Lincoln Pulp and Paper Co., of Merritton, has resigned his position to accept the post of general manager of the paper branch of Arthur D. Little, Inc., Cambridge, Mass. Mr. Fair's rise in the paper industry has been quite rapid. Only about thirty years of age, he joined the Lincoln Pulp and Paper Co. in his teens and rose to be superintendent of one of the company's mills. It is stated that the attention of the American firm was drawn to him through his excellent work as one of the instructors in the recent pulp and paper course of studies, and his splendid record of success as superintendent of the Lybster mill at Merritton.

J. L. Pratt, a pioneer of the Ottawa district lumbering industry, who was connected with J. R. Booth for half a century, died recently at his home in Ottawa, at the age of 93 years. Among his achievements was the supervision of the erection of the present paper and sulphite mills of J. R. Booth, Ltd., at the Chaudière Falls, in Ottawa.

The annual meeting of Ritchie and Ramsay, Ltd., coated paper manufacturers at New Toronto, was held last month, when the annual reports for the year showed a satisfactory volume of business for 1928. Officers elected were as follows: President and Managing Director, Geo. W. Pauline; Vice-president, J. D. Montgomery; Secretary-Treasurer, J. M. Finlay.

Officials of the Thunder Bay Paper Co., of Port Arthur, are well pleased with the record of No. 2 machine, which was brought up to capacity production in less than a week after the installation was completed. The machine was built in



Clean felts *thoroughly* and you will clean them less often!

WASH your felts the Oakite way, and you will find, as many other paper mill men do, that they *stay clean longer*. For Oakite removes all dirt, sizing, and other foreign matter, leaving felts *thoroughly* clean—as soft and porous as the day they were first placed on the machine!

And while the use of Oakite assures less frequent cleaning, it also *speeds up* the actual cleaning itself. Rinsing is faster and many valuable minutes are saved on every felt washed, with the result that non-productive time is still further decreased.

Let Oakite prove its worth on your next felt cleaning job. Call in our nearby Service Man and ask him for details—no obligation. A card to us brings him promptly.

Oakite is manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y

Oakite Service Men, cleaning specialists, are located at

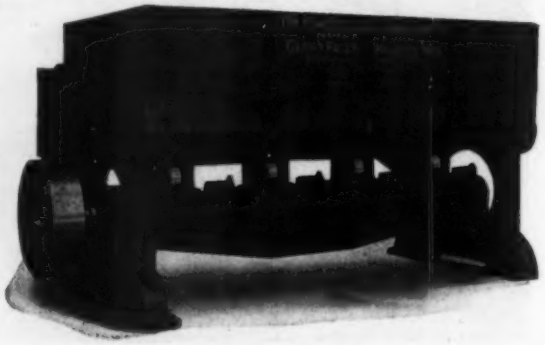
Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, *Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, N. Y., Buffalo, *Camden, N. J., Canton, O., Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., Decatur, Ill., *Denver, *Des Moines, *Detroit, Erie, Pa., Fall River, Mass., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Greenville, S. C., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., *Kansas City, Mo., *Los Angeles, Louisville, Ky., Madison, Wis., *Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., Oshkosh, Wis., *Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Providence, Reading, Pa., Richmond, Va., *Rochester, N. Y., Rockford, Ill., *Rock Island, *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Springfield, Mass., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods



The

FANCHER

Patented

ROLLER SHOE FLAT SCREEN

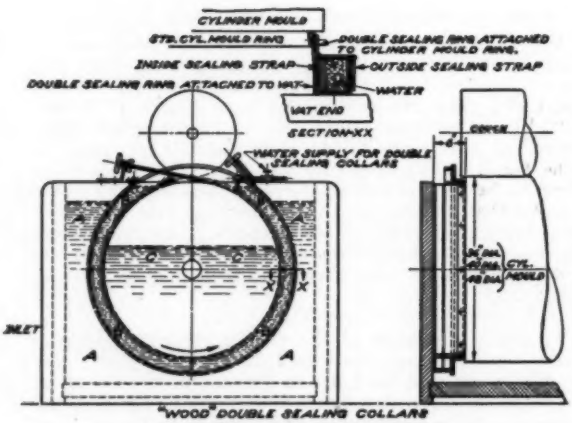
ANNOUNCING

The

A. D. WOOD

DOUBLE SEALING COLLAR

(Patent Applied For)



"WOOD" DOUBLE SEALING COLLARS
USED ON DECKERS, WET MACHINES, ETC.

GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

Waterous Ltd., Brantford, Ont. Manufacturing Agent

E. K. Mansfield Co., 501 Fifth Ave., N. Y. C.
Eastern Representative

Woodbury & Wheeler Co., 55 Second St., Portland, Ore.
Western Representative

See pages 342 and 343 in the 1927 Paper and Pulp Mill Catalogue

Beloit, Wis., by the Beloit Iron Works, makers of all the machines owned and operated by the Consolidated Water Power and Paper Co., of which the Thunder Bay mill in Port Arthur is a division. The second machine produces a sheet of paper 245 inches wide, 11 inches wider than the first machine installed.

NEW BRUNSWICK

Long Term Leases May Be Withdrawn

Before the Corporations Committee of the Legislature the various bills connected with the transfer of the Bathurst Co., Ltd., and its subsidiaries to the Bathurst Power and Paper Co. were recently under consideration. During the discussion the opinion was expressed freely that the representations which had been made by Angus McLean, president of the Bathurst Co., at the time that previous legislation had been passed for that company, had been misleading. The opinion also was expressed that in future safeguards should be placed about the timber resources of the province in order that the public reap the greatest possible benefit from them.

Premier Baxter made a plain statement to the effect that upon the expiration of timber leases in 1933 there would be a new arrangement concerning leases and that would be entirely dependent upon the manner in which the lessees had carried out by that time the agreements which they made concerning various developments, and the expenditure of certain sums upon them. There would be no long-term leases if provisions were not carried out.

The bill relating to the Nepisiguit Power Co., the Bathurst Power and Paper Co. bill and the Nepisiguit Storage Co. bill were approved with amendments. The time in which work is to be started was made uniform in all and provision was made that $500,000 be spent. One year is allowed to start, and two years in which to complete the work.

I. P. Co. Starts Work at Dalhousie

Representatives of International Paper Co. have recently acquired about twenty-five pieces of land, including almost as many buildings, in Dalhousie. The purchases include real estate located on the bank of the river. The land purchased will form the site of the new pulp and paper mills which International will erect at Dalhousie.

Employees of the Fraser Brace, Ltd., which handled the contracts for the extensive developments of International Paper in the Gatineau River valley, are now at work at Dalhousie. This activity settles finally the question of just where the new plant will be built, although it had been conceded for months that Dalhousie had the inside track over the other centers in Northern New Brunswick that were considered in the running about eight months ago.

Construction work is just about completed at the Grand Falls power plant of the St. John River Power Co., an International Paper subsidiary. Rapid progress is being made on the installation of the machinery, and it is expected that power will be turned on towards the end of the coming summer.

In connection with the recent acquisition of the Bathurst Co. by the Nesbitt-Thomson and International Paper interests, the Bathurst Power and Paper Co., Ltd., of Bathurst, was recently incorporated at Ottawa. The financial arrangements of the company provide for a capital stock consisting of 750,000 class A shares, without nominal or par value, and 500,000 class B shares, without nominal or par value.

Fraser Companies have just brought their third fine paper machine into operation, adding 65 tons per day to the output of the Madawaska mill. Last year the company had a high grade sulphite paper output of approximately 80 tons per day from two machines, so that its present capacity is 145 tons. A machine for producing heavy-weight sulphite paper

In the paper mill many Bristol's Mechanical Motion Recorders are used in connection with Pulp Beaters

To Show the Position of *Beater Rolls* at All Times

Whether or not the rolls are moved and how often is clearly recorded on the chart—thus making it possible for operatives to govern the opening space under rolls, and produce pulp of correct fibre length and uniform consistency.

The construction of Bristol's Mechanical Motion Recorder is very simple. The lever arm, which is shown in the above illustration, passes through a slot in the bottom of the case and is attached directly to the penarm, which records directly on the chart. There is no complicated mechanism to get out of order—equipment will operate satisfactorily for years without repairs or adjustments.

Sales Engineering Service without obligation.

The Bristol Company

Waterbury, Connecticut

This photograph shows a typical paper mill installation of Norwood Gravity Filters—simple, substantial, dependable and economical.

Why Norwood Equipment Helps Increase Profits

NORWOOD
Paper Mill
Equipment

Filters
Super-Calenders
Glassine-Calenders
Platers
Dusters
Brushing Engines
and other
dependable
paper mill equipment
Ask for Illustrations
and Specifications

NORWOOD equipment—Water filters and paper mill machinery—is designed and built by an organization which for nearly forty years has been working with the paper industry.

Close association with the industry has given Norwood's engineers the mill man's viewpoint—and a clear insight into your problems. Norwood equipment, as a result, is built to meet your needs—rugged, dependable construction—with a host of time, labor and trouble saving features which help you maintain satisfactory performance, continuous operation and profitable production.

If you have a problem in connection with water filtration or involving calenders, platers, dusters, suction boxes or brushing engines, Norwood's engineers will gladly co-operate with you. We suggest that you write us.

NORWOOD ENGINEERING COMPANY
FLORENCE, MASS.

NORWOOD

is now approaching completion and should be in operation towards the middle of this month. After the 1st of May the output of sulphite paper will be approximately 175 tons per day, as against a production of 80 tons per day in 1927.

The Fraser Companies are reported to have closed a big contract for paper with the Sears-Roebuck organization. The paper will be made at the company's Madawaska mill, and will be used for mail order catalogues.

Construction work is just about completed at the Grand Falls power plant of the St. John River Power Co., an International Paper subsidiary. Rapid progress is being made on the installation of the machinery, and it is expected that power will be turned on towards the end of the coming summer.

NOVA SCOTIA

Clyde and Sissiboo Co. Go into Receivership

As a result of the depressed state of the groundwood market, the Clyde and Sissiboo Pulp Co., of Clyde River and Weymouth, N. S., is to go into receivership and will be operated for the bondholders by the Royal Trust Co. The company owns a 15-ton groundwood mill at Clyde River and a 40-ton mill at Weymouth. It also owns undeveloped water powers in Nova Scotia and has 76,000 acres of timber limits on the Clyde and Sissiboo rivers.

The entire investment interest in the company is confined to its $470,000 bond issue, which was originally guaranteed unconditionally by Becker and Co., of London, England. The guaranteeing company went into liquidation some years ago, when the market for pulp and paper declined, and the Clyde and Sissiboo Pulp Co.'s properties passed into the control of Edward Lloyd Co., Ltd., of London, England. That company guaranteed the interest on the bond issue as long as it controlled the property. But the Edward Lloyd organization has given up its interest in the plant, and hence the Royal Trust Co. has made application to the Nova Scotia courts to be appointed receiver of the property.

The Scott Paper Co., operating a pulp mill at Charleston and a paper mill at Chester, Pa., reported a surplus of $351,654 for 1927, showing an increase of more than $110,000 over the preceding year. Gross income for 1927 was $2,066,361. This firm has been operating the Charleston plant somewhat over a year. Previously the company maintained a pulp mill at Caledonia, but it was destroyed by fire a couple of years ago.

Another Newsprint Mill Projected

In reply to a question by Hon. Wm. Chrisholm, leader of the opposition, asking the Premier to inform the Legislature whether or not there was any foundation for persistent rumors that a big pulp and paper mill was to be established in Nova Scotia, affecting Crown lands along the Mersey River, Premier Rhodes stated that I. W. Killam, president of the Royal Securities, of Montreal, and proprietor of the Toronto Daily Mail and Empire, is to establish a newsprint industry which will become the second largest industry in the province.

The agreement does not involve the lease of Crown lands, but the sale on a stumpage basis of timber at fair prices from a portion of the Crown lands. The basis of the wood supply of the industry will be from lands owned in fee simple by the company, which has consented, as a part of the agreement, that timber on all lands will not be exported but will be held for the purpose of manufacture in the province. This will mean the employment directly of upwards of 1,000 men, and in addition will afford a convenient and continuous cash market for pulp wood.

Details of the new industry were withheld for the present, Premier Rhodes deeming it unwise to make any further announcements until the necessary formal documents have been completed.

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

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QUICK AND PERMANENT RELIEF

for all belting troubles has been secured for over forty years through the use of STEPHENSON BAR BELT DRESSING. There is no SLIPPAGE or DETERIORATION where STEPHENSON is used.

You can prove this in your own plant without cost to you. Send us the coupon and we will send you a large sample and complete details about this material.

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P.

More useful work with direct drive

ACCORDING to one motor manufacturer, "the losses in a chain or gear drive are generally from 1½ to 3%, and the losses in a belt drive are usually estimated to be from 3 to 10% of the power transmitted."

With Nash Hytor Vacuum Pumps, *you can avoid such power losses. For Nash Pumps can be direct driven by synchronous motors.*

The illustration shows a typical arrangement. The revolving impeller of the pump can be mounted on the same shaft as the rotor of the synchronous motor.

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With this new caliper rolls may be calipered to the end of face without reversing the instrument. Only two adjustments are necessary in changing from one diameter roll to another. The majority of the parts are made of aluminum alloy making the caliper very light and easily handled but very sturdy.

EXTREMELY ACCURATE.

FARREL ROLLS are made as large as 298" ON THE FACE

FARREL-BIRMINGHAM COMPANY INC.,
ANSONIA, CONN.

Successor to: { Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848.
Birmingham Iron Foundry, Derby, Conn., Est. 1835.

BRITISH COLUMBIA

Investigation of Forest Situation

In order to try to settle once and for all whether or not there is justification for the concern of various interests over the forest situation in British Columbia, the Legislature has decided to instigate an inquiry into the situation. During the session at which the proposal to make this investigation was endorsed, the Hon. T. D. Pattullo, Minister of Lands, entered into a lengthy defense of the policy of his Department, whose much criticized policy has been practically to let nature take its course.

Hon. Mr. Pattullo vigorously defended his ideas, but complained bitterly that his statements regarding conditions were taken as lacking all officiality. But the inquest is being made, and if it is made honestly, there is little question but that many changes will be made in British Columbia's forest control. The department's policy is based on the theory that depletion from cutting, from fire and from insect destruction is counterbalanced by natural growth; and it is claimed that artificial reforestation is needed only where nature is severely handicapped.

C. S. Leary, liberal member in the Legislature, recently urged for improvements in the Government's methods of dealing with the forest-fire menace. He pointed out that foremen placed in charge of fire-fighting crews in British Columbia were, for the most part, unversed in the proper methods of forest-fire fighting. As a solution to this situation Mr. Leary advocated the establishment of a training school in the province. While it is accepted that fire-fighting methods are steadily improving in the province, Mr. Leary further urged that a greater appropriation be sanctioned by the House.

Good Showing by B. C. Pulp and Paper

British Columbia Pulp and Paper Co., Ltd., of Vancouver, which on November 1st, 1925, took over the former Whalen properties, has just released its second annual report, covering the twelve months ended Dec. 31st, 1927. Considering the less favorable market conditions which prevailed during the greater part of the year, the report is very satisfactory.

Operating profit of $777,551 was only $29,681 less than for the previous year. First mortgage bond interest was earned 3.49 times, and general mortgage bond interest (after deducting interest on the first mortgage 6's) was earned 5.28 times, before depreciation. After writing off $384,861 for depreciation—or $10,000 more than the amount provided out of the previous year's earnings—and providing for Dominion and provincial income taxes, net profits were equivalent to $8.62 per share of 7 per cent preferred stock, the dividends on which have been paid regularly to date. The preferred stock was given to first mortgage bondholders in lieu of arrears of interest on the old Whalen 6's.

Roscoe M. Brown, district forest inspector, has been appointed superintendent of the Forest Products Laboratory at Vancouver. One of the senior technical men of the forest service, Mr. Brown received his academic training for the most part at the University of Toronto, where he graduated in both engineering and forestry. Since 1912 Mr. Brown has had a great deal of experience in the details of forest administration and the work of forest research in Alberta and British Columbia. For the past five years he has been stationed at Kamloops, but will now be taking up his residence in Vancouver.

Hinde and Dauch to Build in Winnipeg

The Hinde and Dauch Paper Co. has announced its intention to start this year on the construction of a paper mill and paper box factory at Winnipeg. The mill will be a duplicate of the 50-ton strawboard mill recently completed at Trenton, Ont., and in addition there will be a corrugating plant and a paper box factory. The combined establishment will cost $1,000,000 and will employ several hundred men.

PERKINS HOLYOKE

CALENDER ROLLS

"No CALENDER can be better than the ROLLS in it"

Since 1873

Perkins Calender Rolls have been built to meet exactly the requirements of paper makers. The marked individuality of Perkins Calender Rolls today has been developed through long years of close application to the problems of the paper industry.

Perkins Calender Rolls are uniform, resilient, resistant. They stand heat better and wear longer.

B. F. Perkins & Son, Inc., Holyoke, Mass.

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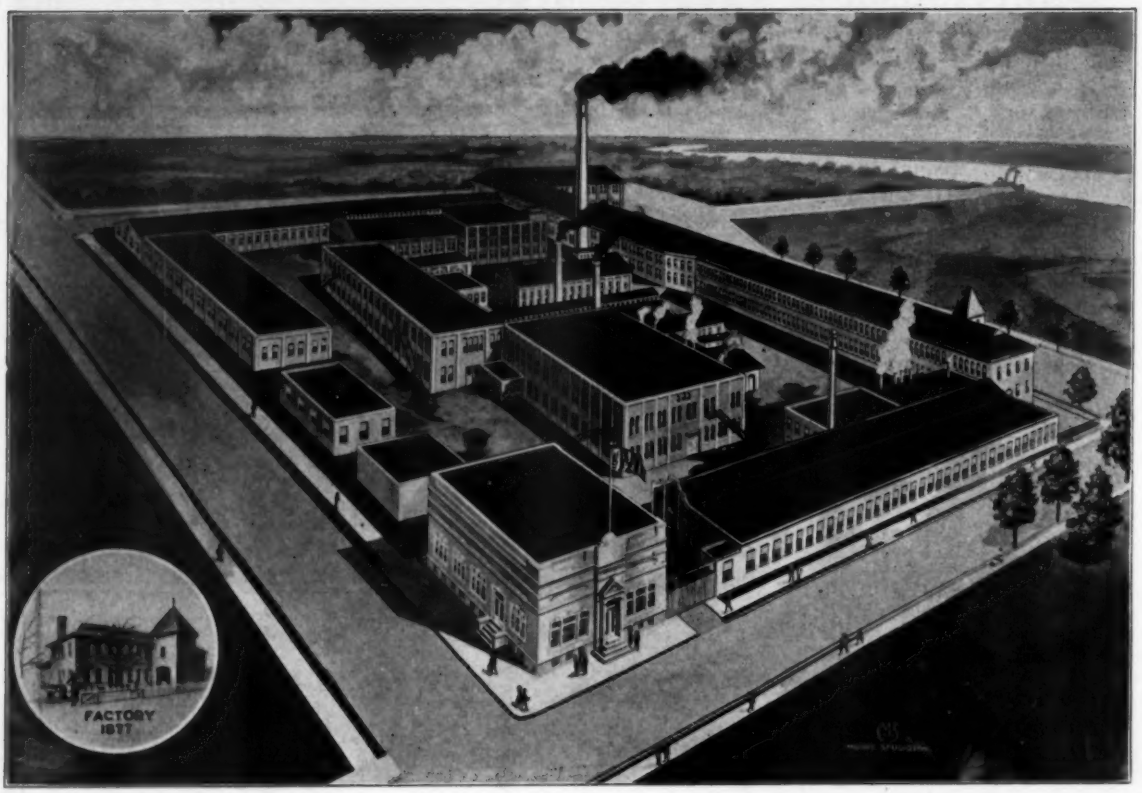

This illustration Visualizes Fifty-one Years of Progressive Growth
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PACIFIC COAST NEWS

WASHINGTON

Contract Let for East Hoquiam Tunnel

The contract for the construction of a 1400-foot tunnel through Campbell's hill in East Hoquiam, for the Grays Harbor Pulp and Paper Co. water line, was awarded on March 21 to Swan Dahlberg of Port Angeles, Wash. The contract for digging the pipe line trench from the pulp mill site to the water diversion works on the East Hoquiam River was also awarded to Dahlberg. Work on the project was to start immediately.

By constructing the proposed tunnel through Campbell Hill, the Grays Harbor Pulp and Paper Co. will save several thousand feet of pipe line around the hill and following the Houquiam River, a right-of-way that was first proposed. The tunnel will measure five or six feet, depending on the formation encountered by the tunnel diggers. Plans for the pumping plant and dam were prepared immediately following the announcement of the above awards.

The Grays Harbor Pulp and Paper Co. is a subsidiary of the Zellerbach Corporation.

An extension plan of $200,000 which will double the capacity of the mill of the San Juan Pulp Manufacturing Co. of Bellingham, Wash., was begun late in March. A crew of fifty men were started out on the job. It is believed that the new unit will be in operation early in August. Most important additions will include two digesters measuring 15-49 feet and a 1,000-hour power boiler. The city vacated water front streets near the plant to permit the building of the new unit.

The first pulp cargo to be shipped to the Atlantic Coast this year, and one of the largest shipments ever sent from the Pacific Coast on one ship, was carried on the American-Hawaiian line steamship American, leaving Vancouver, Washington, the middle of March. The Columbia River Paper Mills Company made the shipment which included 2,000 bales (250) tons of pulp for Boston and 2,000 bales for New York.

OREGON

Hawley P. & P. Co. Makes Yearly Report

Net profits earned by the Hawley Pulp and Paper company during the year ending December 31, 1927, amounted to $415,856, according to a statement issued late in March through the Blythe, Witter & Company. The total assets of the company on December 31, were listed at $9,299,414.64. In the statement to the stockholders, issued by the president, Willard P. Hawley, Sr., the information was given that two large papers in Portland, Oregon, have contracted for a daily supply of newsprint, effective January 1, 1929. This will take the greater part of the company's output of newsprint.

It was further stated the earnings of the company have been very satisfactory in view of the fact that the old No. 4 paper machine was shut down on October 9, and dismantling started immediately thereafter. The new machine was installed and paper was run on it for the first time on February 27, 1928. With the new machine in operation, the plant has a total daily capacity of about 200 tons of finished paper, of which approximately 120 tons is newsprint and the balance wrapping and tissue papers.

Effort is being made to bring a pulp mill to Springfield, Oregon, and the city has bid for one of the nine paper mills which contemplate entering Oregon. A committee recently demonstrated to the local Chamber of Commerce that timber suitable for paper manufacture can be obtained.

George Pusey, who has been mill superintendent of the Hawley Pulp and Paper Co., Oregon City, for a number of

Judge Us by the Company We Keep

Too many paper mills now use Daytons for any one to question the ability of Dayton High Speed equipment to improve beating conditions, and lower beating costs. When mills of the prominence of the Champion Coated at Hamilton, Ohio, and the Castenea at Johnsonburg, Pa., find it good business to keep on buying Daytons as fast as they can, other mills can ill afford to "pass up" any opportunity to make a serious investigation of Dayton performance.

Why not delegate some one in your organization to start a "Dayton" investigation? We'll supply the list of Dayton users —you to ferret out the facts wherever you will. That's fair. Let's start Now.

Get the Facts. We Will Supply List of Users to Start You Off

The Dayton Beater & Hoist Co.,
Dayton, Ohio

E. K. Mansfield Co.,
501 5th Ave., New York, N. Y.

DAYTON
HIGH SPEED BEATERS

It Pays To Buy Quality

THE Manitowoc Cylindrical Rotaries shown above were installed in a paper mill eighteen years ago and continue to give the same dependable service they did when placed in operation.

Long and uninterrupted service is typical of Manitowoc Equipment and is due to proper design, high quality of materials and careful workmanship.

Like all other Manitowoc Paper Mill Equipment, these Rotaries are outstanding for their sturdy construction and for the dependable service they render. Remember, we design and build equipment to meet the exact conditions of the mill. Let us figure on your requirements.

Cylindrical Rotaries are made in our own plants and we would be glad to send you our booklet which describes and illustrates the equipment. If you will let us know what your requirements are, we will be pleased to quote accordingly. Write for this booklet today.

Let us figure on your:

Barking Drums
Sulphite Digesters
Experimental Digesters
Relief Separators
Bleach Mixers
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Howard Refiners
Rod Mills
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Disc Evaporators
Blow Pipes
Cylindrical Rotaries
Globe Rotaries
Lime Kilns

MANITOWOC ENGINEERING WORKS
MANITOWOC, WISCONSIN

MANITOWOC

years, has been promoted to the position of general superintendent. Paul Hess succeeds him.

CALIFORNIA

Crown-Willamette Zellerbach Merger

Subject to the approval of the stockholders, the Crown-Willamette Paper Company and the Zellerbach Corporation were consolidated last month, according to an announcement made in San Francisco on March 30. The merger was unanimously approved by the directors. Reports of the proposed merger have been current on the Pacific Coast for several weeks.

The Crown-Zellerbach Corporation will be the name of the new company, which will have combined assets of about $100,000,000, and a daily capacity of 1,450 tons of finished paper, which, it is declared, will constitute one of the largest distributors of paper and paper products in the United States. About 350,000 acres of timber lands are owned by the two concerns in addition to a number of paper mills on the coast.

The present Zellerbach Corporation, which already is a holding corporation for several operating subsidiaries, will be the medium for completing the merger. The capital structure of the new organization will be 50,000 shares of convertible preferred stock, which constitutes the approximate present outstanding unconverted portion of 90,000 shares, 200,000 shares of $5 cumulative preferred and 2,000,000 shares of common stock. Present common stockholders of the Zellerbach Corporation will receive a stock dividend of about 5½ per cent, bringing their holdings in the new company to 1,000,000 shares, including that set aside for the unconverted portion of the convertible preferred.

It is understod that there will be a dividend of 20 per cent on the 1,000,000 shares thus set up, payable in $5 cumulative preferred stock. Thereafter, according to the announced plans, the 1,000,000 shares of additional common will be exchangeable share for share for the common stock of the Crown-Willamette Paper Company. It is believed that the new common will pay dividends at the rate of $1 per share every year, effective immediately. For the present, bonds and preferred stock of the Crown Willamette Paper Company will remain outstanding.

The Crown-Willamette Paper Company operates mills in Oregon City, Ore., Camas, Wash., and Stockton and Floriston, Cal. The Zellerbach Corporation has mills in Shelton, Port Angeles and Aberdeen, Wash., and Stockton, Cal.; a mill under construction at Port Townsend, Wash.; and converting plants in Stockton, San Francisco and Los Angeles.

Headquarters for the new concern will probably be in San Francisco.

The Pacific States Paper Trade Association will hold its annual meeting at Del Monte, Cal., May 7 to 13, 1928. W. B. Maxwell of Blake, Moffitt and Towne, San Francisco, is in charge of the program committee.

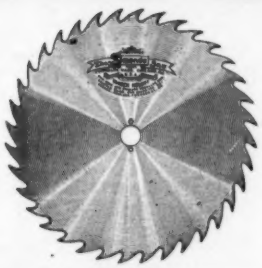
The annual convention of the Pacific Coast Paper Box Manufacturers' Ass'n will be held June 25, 26 and 27, 1928, at Del Monte, Cal. W. J. O'Donnell, San Francisco, is chairman of the convention committee.

The Paperboard and Carton Co. of San Pedro, Cal., which is now under construction, will be in operation about the first of September, according to present plans. The site of the plant is an old building which is being reconstructed for the purpose. Approximate cost of the plant will be $750,000. A. H. Dougall, who has been identified with the pulp and paper industry on the Pacific Cast for a number of years, is head of the concern.

Joseph Brown, Sr., president of the Los Angeles Paper Manufacturing Co., Los Angeles, passed away February 15, 1928. Mr. Brown's death was the result of an accident.

SIMONDS

Circular Saws and Machine Knives



For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

Simonds Saw and Steel Co.

Established 1832
Fitchburg, Mass.

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1500 HOURS AND MORE ON GLASSINE

H. W. BUTTERWORTH & SONS CO.

Established 1820

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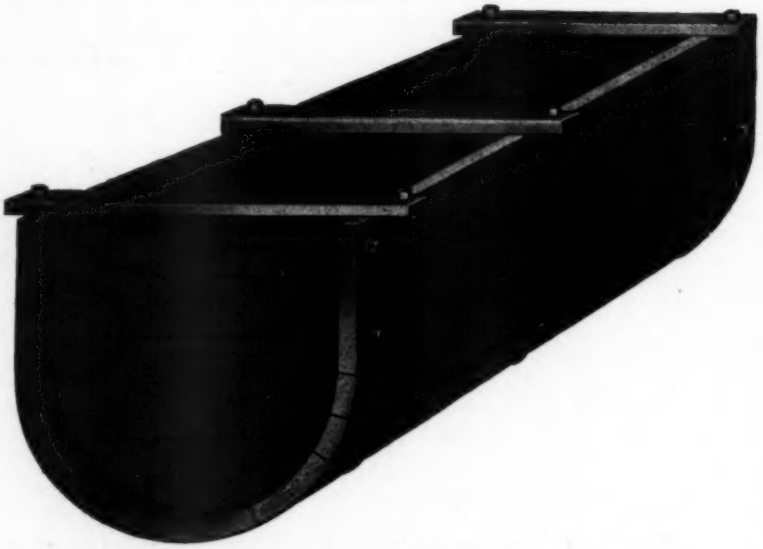
Standardize on Stearns Tanks

We are equipped to manufacture any kind of a wood tank that may be used in a paper mill.

Our modern tank factory is equipped to produce Stuff Chests, Acid Towers, Blow Pits, Acid Storage Tanks, Stave Pipes, Box Tanks, Round Tanks, Special Agitator Tanks, Half Round Tanks and special Tanks of all Sizes and Shapes.

Take your tank problem to Stearns.



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NEPONSET - BOSTON, MASS.

FOR ALL PAPERS—

A Fitchburg Felt

¶ For whatever paper you make, whether fine ledger or bond, book or coarse paper, Fitchburg Felts give long and efficient service.

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¶ When next thinking of dryer felts, think of "Fitchburg."

FITCHBURG DUCK MILLS

ESTABLISHED 1844

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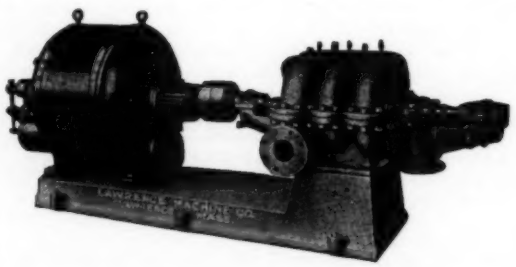

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Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

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Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

NEW ENGLAND NEWS

Connecticut Mills Organize in Waste Utilization and Stream Improvement

Representatives of the paper and board mills of Connecticut met with representatives of the State Water Commission and Connecticut Manufacturers' Association in the Senate Chamber of the Capitol at Hartford on March 26, to develop a co-operative program in waste utilization and stream improvement. The meeting was called by the Connecticut Manufacturers' Association, and was well attended. Connecticut is the first of the northeastern States to initiate such a co-operative movement.

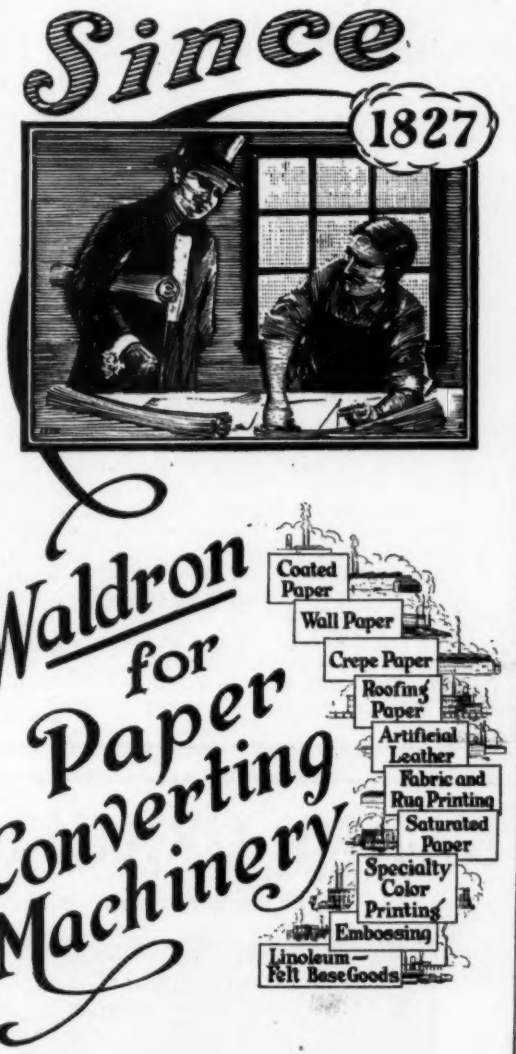
S. H. Wadhams, M. D., director, and William R. Copeland, sanitary engineer, represented the State Water Commission. Dr. Wadhams stated that the commission had very definite jurisdiction in the control of stream pollution, but that they realized the importance of industry, and were proceeding cautiously that a constructive program, not injurious to industry might be developed. He introduced C. M. Baker, engineer of the American Paper and Pulp Association, who outlined in some detail the program of the association, and told of co-operative policies developed in other States. He concluded with a suggestion that a committee, representative of the paper mills, be appointed to co-operate with state officials, and the American Paper and Pulp Association. It was agreed that such a committee be appointed by the Connecticut Manufacturers' Association. The personnel of this committee will be announced later. Similar committees, representative of other industries in Connecticut, will doubtless be appointed later. The chairman of such committees, constituting a central committee of the manufacturers' association will endeavor to co-ordinate the activities of the various industries interested in stream improvement.

The question of constructing a pulp mill to utilize the waste woods of Connecticut was also discussed. C. C. Heritage, of the Forest Products Laboratory, Madison, Wis., spoke in some detail on the semi-chemical process of pulping hardwood, and the probable utilization of such pulp in the mills of the State. He also presented cost data, regarding the construction and operation of such a mill. There appeared to be some doubt, however, whether such pulp could be economically utilized in Connecticut. Arrangements were made for the appointment of a committee to study the matter more in detail, and report later.

Improvements By Crocker Burbank & Co. Ass.

The strong position of old books and magazines in the Boston market is ascribed in considerable part to the new converting plant of Crocker Burbank & Co. Ass., at Fitchburg, Mass., which has now been completed. This plant converts waste paper to half stock, bleaches it and delivers it to pipe lines feeding the beaters in all the company's mills. It increases their consumption of waste paper, and the all around efficiency of their plants. Crocker Burbank & Co. Ass., are large shippers of paper to Curtis Publishing Co., and the quality must be of the best. It has been found by this, as well as other mills, that the substitution of a certain portion of old book stock for soda pulp cheapens the cost of manufacture and does not in any way impair the quality of the paper.

This company has also embarked on a splendid conception in the field of power supply. Contract has been given to the Foster Superheater Co. of Boston for the installation of powdered coal and oil equipment. Construction has been commenced, but it is stated operations cannot be expected before six months. There will be three 500 h. p. boilers, which will operate greatly in excess of rating, and these will be served by three Aero burners. To provide against strikes or shortages of coal, the boilers will be equipped so that a switch to fuel oil can be made within twenty-four hours. Live steam will be served to the various units of the Crocker Burbank Co. Ass. system by pipe lines. Only American



For more than one hundred years, Waldron has worked with these industries—supplying valuable data, furnishing specific information, making proper recommendations concerning processing methods and machinery to improve products. No other organization is so well equipped with the specialized knowledge gained from experience to assist in solving your problems.

If it is for paper converting—consult Waldron.

JOHN WALDRON CORPORATION

Main Office and Works—New Brunswick, N. J.

208 W. Washington Street CHICAGO

30 East 42nd Street NEW YORK

THE NINTH ANNUAL CONVENTION
of the
AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION
Is To Be Held At
PITTSFIELD, MASS.
MAY 31st, JUNE 1st and 2nd

IN THE BERKSHIRE HILLS—One of the Papermaking and Industrial centers of America.

It was in the Berkshires that the first wood pulp was made in this country. In the Berkshires stands the mill where the first paper was made in America from wood pulp.

Here, too, are the famous **CRANE MILLS**, where the paper for the United States Government money and bonds, and for foreign countries as well, has for years been made.

A drive through the Berkshires is like a drive through fairyland—scenic grandeur everywhere.

The big plant of the **GENERAL ELECTRIC COMPANY** is located at **PITTSFIELD**, and is well worth seeing.

The **E. D. JONES & SONS COMPANY**, makers of machinery for pulp and paper mills, is in **PITTSFIELD** and bids you a real welcome as do all the concerns in the Berkshires.

At Lee, just a few miles from **PITTSFIELD**, are the mills of the **SMITH PAPER COMPANY**, one of which was the first to use wood pulp in the country for making paper.

In addition to the **CRANE MILLS** at Dalton, are the **BYRON WESTON MILLS**, and in **HOUSATONIC** is the **B. D. RISING PAPER COMPANY**, while at Adams, a short distance away, is the **BERKSHIRE HILLS PAPER COMPANY**, and the **L. L. BROWN PAPER COMPANY.**

IN SOMETHING LIKE AN HOUR'S DRIVE FROM PITTSFIELD, YOU WILL SEE ABOUT FIFTY PAPER MILLS—and they all extend a cordial invitation and welcome to the Convention.

That is by no means all. There will be speakers at the convention who will talk on subjects nearest the heart of the **PAPER MILL SUPERINTENDENT**—it will be three days of highly interesting and instructive experiences.

SO COME ALL YE FAITHFUL and ye who may not have been so faithful, and help make this Ninth Annual Convention the best ever.

AND THE LADIES—bring them with you and they will have a time that will linger long in their memories—we'll see to that.

ALL TOGETHER FOR A MOST WONDERFUL CONVENTION.

JOHN J. WHITE
GENERAL CHAIRMAN

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

Writing Paper Co. and Bird & Son have anything so unique in power installations for transportation of steam to more than one plant.

A noticeably improved demand for book papers is worth mentioning this month, for it comes at a time when the Swedish suspension and the high price of old book stock has enhanced costs somewhat and the tendency to slash prices on finished paper must necessarily be abandoned. The keenest sort of competition for orders in New England has been furnished by two outside mills, one particularly, in New York state, on machine finish, English finish and super calendered books. Demand for other grades of paper has been just fair with the expected improvement in the fine writing paper field rather slow to materialize.

Traffic Matters

Coal rate advances to leading paper mill centers were the occasion for vigorous views on the subjects by representatives of leading manufacturers. A hearing on the proposals of the New England carriers to advance coal rates was heard at the South Station Boston on Tuesday, March 26. Among the advances proposed was one involving a new rate of $1.50 per ton against an old rate of $1.36 from New Haven tidewater to Holyoke. Springfield would be $1.55 against $1.45 at present; from Bridgeport, Pittsfield, $1.60 against a present rate of $1.33. Turners Falls would be slightly reduced from Stratford and Bridgeport, but advanced from New Haven, and Deerfield's new basis would be slightly better than the old.

The New England Paper & Pulp Traffic Ass'n and the George W. Wheelwright Paper Co., whose rates would be advanced from $1.26 to $1.50 at Wheelwright station from Boston, insisted that such advances would greatly affect the nature and desirability of their traffic from the railroad standpoint. Moreover, it was playing into the hands of the all rail coal shippers, who would be quick to capitalize the new rates to their advantage, according to other paper interests. All industries represented promised a fight before the I. C. C. if the proposals are published to become effective.

China clay importers have convinced the Boston & Main R. R. of the advisability of absorbing the handling charges on china clay at the State Pier at Portland, Me., on line hauls over their own rails. Thus the old rate at the piers of 35c per ton for bulk clay and 22c for casks on shipments moving to paper mills at Lawrence, Fitchburg, etc., will be eliminated. The same railroad has also agreed to publish its tariffs on clay from Boston to read from shipside, which will involve an expense at the piers in this city.

China Clay Loading Apparatus Tested

The Mystic Terminal Co. tested out its china clay pneumatic unloading apparatus at Pier 48 Charlestown, Boston, on March 26. A pile of phosphate rock was used in the test and the equipment which was manufactured and installed by the Holly Pneumatic Systems, Inc., of New York, functioned very well.

The test was in preparation for the arrival of the Italy Maru from Fowey during the first week of April when the equipment will receive a thorough tryout. A maximum of 75 or 80 pounds of blowing pressure can be applied. The clay will be sucked from the hold through a flexible pipe over the pier shed to a separator located above the siding. It drops by gravity from the separator into a box car loader which piles the material at either end of the car.

Each of these units which are said to cost around $75,000, works one hatch of a boat so that if the present one is successful, three more will be installed in order that all hatches can be worked at once.

Foremen of Continental Bag & Paper Co., met at the mills of the company at Rumford, Me., for a conference on mutual problems of production. S. E. Patrick, Maine director of Vocational Education stated that the group represented some

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Figure the WHOLE BILL

ANY manufacturer knows too much to base his own manufacturing costs on material alone. Labor cost, too, must be calculated. Any economy in labor cost, means lower finished costs or a chance to use better material.

Apply this same horse sense to your maintenance painting problem. You can use better paint and achieve a lower cost per square foot if your labor cost is reduced.

Vorcolite is a full bodied oil paint of the highest grade, especially compounded for gun application. A single application of Vorcolite, through the Vortex Equipment [which we furnish without cost] will give a result equal to two or three brush coats.

Vortex Painting covers the surface faster and more efficiently, with minimum use of bothersome ladders and scaffolding. Your own handy man does the work.

Fill out and return the coupon for Vortex check sheet and begin today figuring your paint cost by the square foot of finished surface, not by the gallon of paint.

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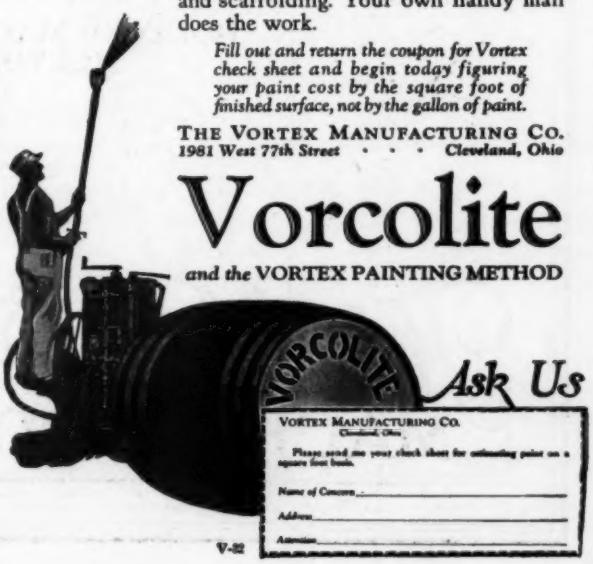

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VORTEX MANUFACTURING CO.
Cleveland, Ohio

Please send me your check sheet for estimating paint on a square foot basis.

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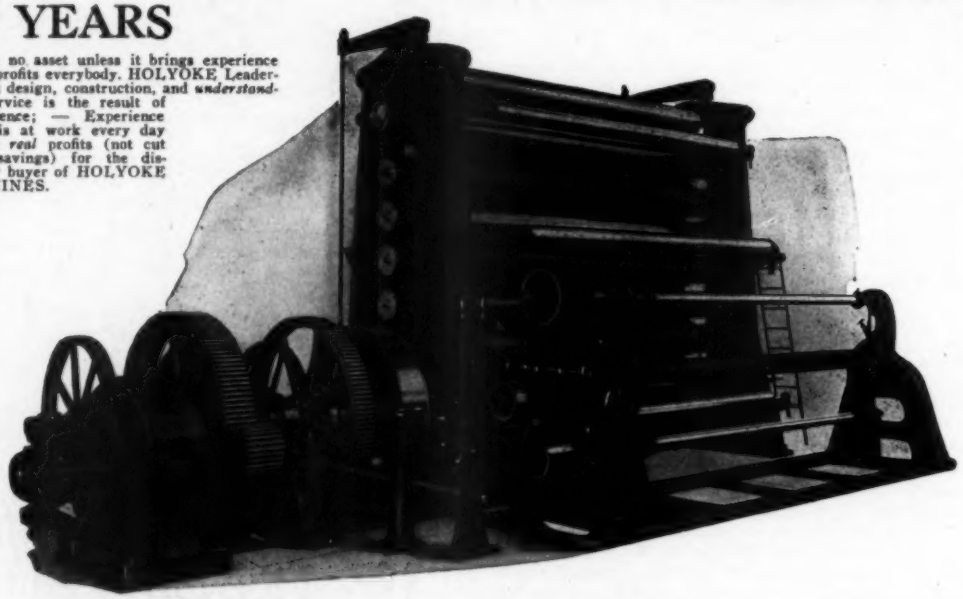
V-22

65 YEARS

Age is no asset unless it brings experience which profits everybody. HOLYOKE Leadership in design, construction, and *understanding* service is the result of Experience; — Experience which is at work every day making *real* profits (not cut price savings) for the discerning buyer of HOLYOKE MACHINES.



HOLYOKE SUPER CALENDERS have been built by the HOLYOKE MACHINE COMPANY for 65 years

HOLYOKE Super Calenders stand the test of "your moneys worth." Let any experienced paper mill operator compare a HOLYOKE MACHINE COMPANY Calender with any other and ask him "honest injun" what *he* thinks. Experience is not earned overnight. It takes years of *practical*, understanding service to the paper industry to design machinery which will meet all special as well as usual conditions. When planning a purchase of equipment consult our Engineers,—get details on recent installations,—write

HOLYOKE MACHINE COMPANY
HOLYOKE, MASS.

Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

828 years of experience in the paper and bag industry, and that the value of such conferences was to draw on these reserves of knowledge which otherwise remain locked within many men.

The Setag Paper Co., of Riverton, Conn., has been reorganized and plans to increase production. The mill is equipped to make 16 to 50 pound kraft and insulating specialties. William Weber has purchased outside interests and will operate the mill with his son. It has resumed operations after a period of idleness with a 10 ton daily production.

American Writing Paper Engineering Staff

Andrew Jackson, who has been acting chief engineer of the American Writing Paper Company, Inc., of Holyoke, Mass., for the past year has been appointed chief engineer of the company. Mr. Jackson has been with the company for eleven years as assistant chief engineer and was previously with Pusey & Jones, designing paper mill machinery.

The engineering division of the American Writing Paper Company, Inc., has been divided into three departments as follows: William G. Russell has been appointed maintenance superintendent in charge of all maintenance matters and the central repair shop. He has been with the company for eleven years, first as chief draftsman and later as assistant chief engineer. Mr. Raymond I. Chapin has been appointed superintendent of power, in charge of all power plants and uses of power. Mr. Chapin is a recent addition to the company's engineering forces. He has had sixteen years' experience as electrical and power engineer since his graduation from the Worcester Polytechnic Institute. Fernand H. Willemain has been appointed assistant engineer in charge of new work or changes. He has been in the employ of the company for eight years and is a graduate of the Mississippi A. & M. College.

Boston Paper Trade Ass'n Meets

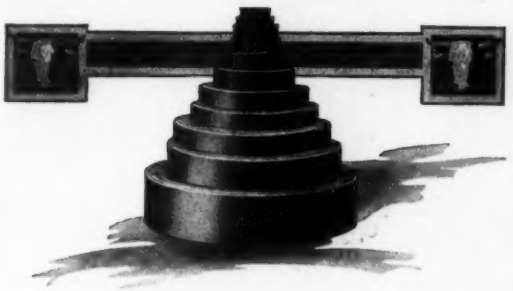
Boston Paper Trade Association held its annual formal banquet and general meeting at the Algonquin Club, Boston, on March 21st. There was the usual pleasing entertainment, a good dinner and an intersting speaker, whose unique subject was "Seadromes." These are floating platforms of immense size to care for trans-atlantic plane service via the Azores, located at 350-mile intervals. He insisted that the aeroplane offers the lowest cost transportation per mile per ton.

The election of officers brought to the presidency Hubert L. Carter, treasurer of Carter Rice & Co. Corp., Boston, the largest merchants in New England; first vice-president, Albert R. Smith, of the Keith Paper Co., Turners Falls; second vice-president, Charles A. Esty, of the Esty Paper Co.; treasurer, T. Harry Casey, and secretary F. Bendil Tracy. Norman Harrower, retiring president, is chairman of the executive committee P. B. Von Olker is chairman of the membership committee and George W. Wheelwright of the arbitration committee. Governor Fuller of Massachusetts was invited, but was detained by legislative affairs.

For the fifth year in succession, Great Northern Paper Co., has furnished forestry students of the University of Maine with fully equipped portable camps near their logging operations in the Maine woods. The camps are moved to keep in contact with the woods operations. A professor in forestry from the university accompanies the students, who also have as guides and mentors representatives of Great Northern and the State Forestry Commission. They spend two winter months in the woods, cruising, scaling, map making, running lines, and other practice incidental to the work of a forest engineer.

A new wet end is being installed in the No. 4 machine at the paper mill of Bird & Son, Inc., at East Walpole, Mass. The improvement includes a Voith inlet, an improved scheme for regulating the flow of stock onto the wire. There is also a new wire drive, two new Bird screens, making four in all; an enlarged thickener, improved suction boxes and a

RHOADS
LEATHER BELTING



IN SERVICE 44 YEARS

A report reaches us of a West Virginia mill supply company that recently replaced, for one of its customers, a 2½-inch Rhoads Leather Belt that had been in constant use since 1884. It also referred to a 6-inch Rhoads Belt, put on at the same time as the 2½-inch, that is still in use.

Such long service, we know, is unusual; and no one expects all belts, under present day high production methods, to last forty-four years.

But you do have a right to expect Rhoads Tannate Watershed Belting to last longer on a given drive, wet or dry, than best oak, rubber or fiber belting, and that it will slip less and hence give greater output or more even quality of production.

The Rhoads Service Guarantee assures you economical belt service when you buy Rhoads Tannate Watershed Leather Belting.

J. E. RHOADS & SONS

PHILADELPHIA .....47 N. Sixth St.
NEW YORK.....112 Beekman St.
CHICAGO .....334 W. Randolph St.
ATLANTA .....80 South Forsyth St.
CLEVELAND .....1234 W. Ninth St.

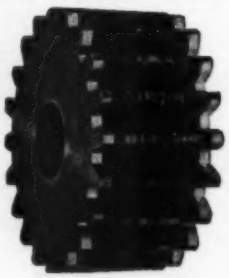
Factory and Tannery, Wilmington, Del.

ROLLWAY
CYLINDRICAL ROLLER
BEARINGS

Many Types and Sizes—to meet any load and speed condition most economically

ROLLWAY BEARING CO., INC.
Syracuse, New York

RAWHIDE—BAKELITE AND FABROIL GEARS



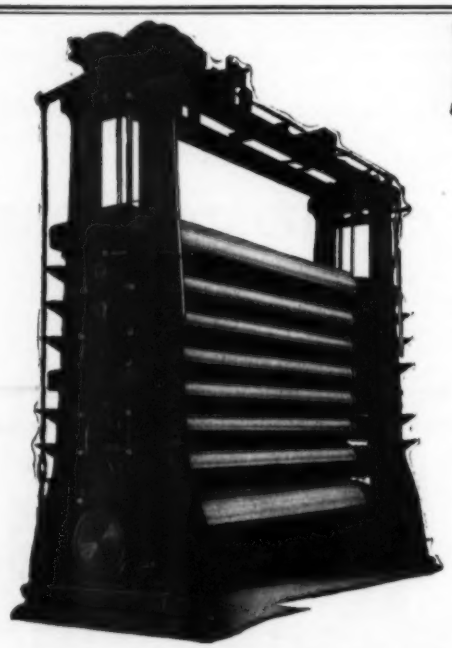
One or a Quantity—Promptly & Reasonable

The Horsburgh & Scott Co.

"Gear Makers Since '89"

5114 Hamilton Ave. Cleveland, U. S. A.

Gears for Every Industrial Purpose—Worm—Bevel—Herringbone—Spur—Spiral—Hardened Heat Treated Gears —Non Metallic Gears and Pinions



LOBDELL

CHILLED IRON ROLLS AND MACHINE CALENDER STACKS

Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

larger suction roll. In fact, it is practically a new fourdrinier. It was built by Rice Barton & Fales of Worcester, is of the latest type, and has a capacity of 350 feet per minute. The size of the new equipment necessitated an addition to the building which is 12x30 feet, two stories high. Save-alls will be installed on the ground floor.

Chase Fibre Offers 50c On Dollar

The Chase Fibre Co., of Passumsic, Vt., one of the Vermont mills which was severely damaged in the flood last November, has offered merchandise creditors 50c on the dollar of outstanding claims.

The mill lost four of its buildings and much stock in the flood, and they have applied to the Vermont Flood Corporation for a relief loan. This will be granted, but it must take priority over other outstanding claims. It will run from 5 to 6 years. It is understood that rather than force a receivership which might net much less, most creditors have decided to accede to the proffered 50 per cent settlement.

Babbitt Kelley Paper Co., of Bellows Falls, Vt., who were inundated by flood waters last year partly due to the New England Power Association dam, have effected an arrangement with the power company whereby they are moving into an old mill of the International Paper Co. They will receive power from the hydroelectric company and in return have surrendered water rights on the Connecticut.

Parker Young Co., put the third of their machines in operation the last week of March. This company suffered damage to its penstock and rail connections by the flood waters last November and have been operating but two of their machines until recently. The penstock was entirely rebuilt and repaired, a new turbine installed and other improvements including a new dam completed.

The Spruce Wood Department of the Great Northern is staffed with the best forestry knowledge available. Richard Diehl, formerly with E. S. Bryant, well known consulting forester in Vermont, has joined the Great Northern staff. R. H. Robertson has resigned as assistant manager of this department to be succeeded by William Hilton.

Hollingsworth & Vose Co., rope and jute papermakers, announce that a product made on a paper base produced in their mill was used in the Lindbergh plane "Spirit of St. Louis." The same manufacturers have successfully introduced a new bristol paper calling it "Squannacook." They offer it in seven colors, and have imparted to it strength and folding qualities for rugged wear.

The Watson Frye Co. plant at Bath, Me., was sold at auction to Benjamin Isaacson on the 14th, and will resume operations in the manufacture of pulpmaking machinery. The sale price was about $28,570.

Net profit of $149,000 for the year 1927 is indicated by President Willson's report for the American Writing Paper Co. The gross profit before note interest was $557,782. The company showed a continuous period of earnings from the time receivership was terminated, March 1, 1927. Dividends on the preferred shares become cumulative in 1929 and the company plans to build up its reserve during the current year, for, barring unforseen troubles, the payment of dividends on those shares seems assured next year.

Philip R. Allen, president of Bird & Son, Inc., has been elected a director of the Boston & Maine R. R., succeeding Homer Loring. The reason for this is to be found in the fact that the late Charles Sumner Bird's estate, of which Mr. Allen is a trustee, was the largest individual stockholder in the road.

Paper merchants in the Boston trade are claiming that bond papers made from 100 per cent Superalpha, the new

INSTALLATION AT MICHIGAN CARTON CO.
No. 14, class "D" LEWELLEN Transmission driving Black-Clawson cutter at the Michigan Carton Company. Machine speed—50 to 250 F.P.M. Sheet length—16¼" to 82½" at any speed.

"....Operates Without Variation"

IN a recent letter from a user of a Lewellen Variable Speed Transmission he says: "Due to the sturdy construction of your drive it operates entirely without variation."

In this particular instance the Lewellen was installed on a cutter. But whether on cutters, winders, slitters, dryers, paper machines or anywhere else in a paper mill, this is true.

The Lewellen has been constructed to eliminate even the slightest variation. The design of the discs is such that when the transmission blocks enter the discs they do not and cannot change position. Both the tightening and shifting screws are provided with automatic locks so that when once they are set they stay that way.

The friction surface of the transmission belt is a special soft mineral tanned leather—the most reliable friction surface possible.

Another thing, the bearings on the Lewellen are always in perfect alignment, and the shaft always runs absolutely true. On the ball bearing type the thrust bearings are enclosed in oil-tight, dust-proof mountings.

The bearing mountings carry pivots exactly central with the ball bearing so that at all times the load is evenly distributed over all the balls in the bearing.

It is easy to understand from these features why the Lewellen Variable Speed Transmission is known to paper mill men as the drive that operates steadily, evenly, without variation.

May we send you the complete story of the Lewellen? Just a card will do.

LEWELLEN MFG. CO.
Columbus, Indiana

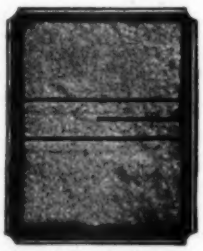
LEWELLEN *Variable Speed* **TRANSMISSION**

From father *to* son *to* grandson.

Away back in 1858, two young men, Asa Shuler and J. W. Benninghofen formed a partnership for the manufacture of paper making felts.

The grandsons of those two men are still making felts, now known as Hamilton Felts.

Three generations of experience! Seventy years spent in making felts! It is this experience that marks the difference between ordinary felts and Hamilton Felts. It is this experience that determines what a Hamilton Felt should be. It dictates the wool to be used, the proper mixture of it, the method of carding, of weaving, the number of threads to the inch—in short, it dictates the entire process. Naturally the result is a better felt—one that has the proper strength in combination with great water removing qualities; that is going to produce more and better tonnage; that is going to save in steam and overhead costs; that's going to wear longer; that requires less down time for washing; that will make money for you. Try *one* Hamilton Felt. There is one to fit your individual needs exactly. Give it every test of use and performance you think a felt ought to have. Then put Hamilton Felts on all your machines.



Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Ask the Hamilton Felt man—a practical felt man who knows paper making as well as making felts to fit individual mill conditions. Most likely he calls on you regularly. If you prefer, write to us direct.

Shuler and Benninghofen, Hamilton, Ohio

The Miami Woolen Mills

ESTABLISHED 1858

Hamilton Felts

fibre brought out as a companion grade to Alpha by Brow Co., tests as high in folding, tear and bursting strength as do papers made from new cotton cuttings.

F. H. Colby has resigned as manager of the Woodlands Department of the S. D. Warren Co. Kendrick Burns has been named as Mr. Colby's successor. Mr. Colby will continue a private practice of consulting forestry.

Charles H. Mohan, connected with L. L. Brown Paper Co., as western representative, died at his home in Northampton, Mass.

J. Bernard Kelley has opened an office at 10 High Street, Boston, where he will represent the International Pulp Co., of New York, as sales agent for their well known abestine filler.

Miss Minor Now With New England Laboratories

Miss Jessie E. Minor, formerly connected with the Emerson Laboratory, but for the past six years in charge of the paper research laboratory at the Collins Manufacturing Company, North Wilbraham, Mass., is now associated with the New England Laboratories as technologist in charge of the pulp and paper division. The New England Laboratories, Birnie Building, Springfield, Mass., is the successor of the old Emerson Laboratory which was purchased by the New England Laboratories six years ago and has since been conducted as its industrial division.

Miss Minor's connection with paper mill work began in 1918 when she took charge of the paper mill laboratory of the Hamersley Manufacturing Company's mill at Garfield, N. J. At that early date it was determined by her that the chief source of minor difficulties and unexplainable variations in the quality of pulp or paper could be traced to the variation in the acidity or hydrogen-ion concentration of the solutions and that a control of the acidity at every point influenced the uniformity of the product.

In papers contributed to the Technical Association and paper industry magazines, Miss Minor has directed attention to the necessity of mill control tests and supervision of sizing methods; she has also paid special attention to research problems bearing on the nature of sizing, as well as the constitution of rosin and of cellulose.

Miss Minor, who is a graduate in chemistry of the University of Pennsylvania and also holds the degree of Doctor of Philosophy in chemistry from Bryn Mawr College, will be a valuable addition to the staff of the New England Laboratories.

Paper Testing by the Public Printer

The testing section of the Government Printing Office is now known officially as the Division of Tests and Technical Control and is under the supervision and direction of Edward O. Reed, who has specialized in paper work for a number of years past. The annual report for the fiscal year ended June 30, 1927, has just been issued. The total number of samples analyzed was 7,336, compared with 6,844 for the preceding year. Paper and paper products tested amounted to 4,768. The samples of paper tested have increased considerably each year since the division of tests and technical control was established and also shows the largest increase of the various materials tested. This is because the amount of paper purchased by the Government Printing Office has increased annually and also on account of the extended investigations of paper for the purpose of improving the present specifications and methods of testing. Over 4,800,000 more pounds of paper were purchased in the fiscal year 1927 than in the previous year. A total of $2,900,000 was expended on paper alone. Some of the figures of acceptance and rejection of paper supplies are of special interest. On a total purchase for the fiscal year under consideration of 44,447,739 pounds of paper, the total quantity rejected amounted to 2,635,791 pounds, or approximately 5.5 per cent. A considerable quantity of the paper rejected

Pull Down Your "Broke" Line!

"BROKE" paper represents a loss and serious inconvenience to the paper manufacturer that can be materially reduced by using dependable, uniform Fourdrinier Wires.

Spread your stock on a Fourdrinier Wire of accurate, uniform mesh—on a wire surface as level as a billiard table—free from wrinkled or sagging edges—and with a strong, smooth seam; and your paper sheet will be of uniform thickness, quality and strength that will greatly reduce "broke" losses.

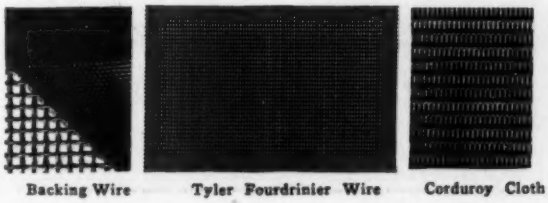
Such a wire is an investment in dependable production, in a high standard of uniformity, and in increased profits.

Tyler "Quality" Fourdrinier Wires are made in brass and phosphor bronze.

Supplied in all widths up to and including 234 inches

The W. S. TYLER COMPANY,
Cleveland, O.

TYLER WIRES



Backing Wire — Tyler Fourdrinier Wire — Corduroy Cloth

A Diamond —and its demands

When an engineer sees the Jenkins "Diamond," he can be sure that the valve on which it appears has met severe demands and has satisfied exacting requirements.

In the making of a Jenkins Valve, demands are made first of all on the metal; it must be proved by analyses both before and after casting.

Demands are made of the design; it must provide strength in every detail. Demands are made of the finished valve; it must pass a test which allows a wide safety margin.

At supply houses everywhere.

JENKINS BROS.

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JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

HILL CLUTCH MILL EQUIPMENT

Brim-full of new information!

The New General Catalog of

Hill Clutch Mill Equipment

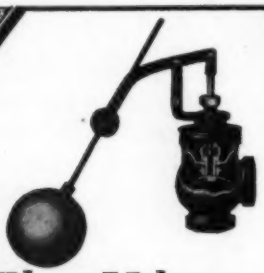
It illustrates every phase of "HILL CLUTCH" MILL EQUIPMENT. In addition, it contains tables, diagrams, engineering data, etc., which eliminates guess work in the selection of proper power transmission units. Every paper mill man interested in Power Transmission should have a copy.

Write Us.

The Hill Clutch Machine & Foundry Co.

Power Transmission Engineers

General Office and Plant
CLEVELAND, OHIO



This Float Valve won't leak

Only in the Davis Float Valve do you find this perfected, tight-closing disc—the distinctive feature that absolutely prevents leaking. Positive action is absolutely necessary in this valve's service, maintaining a constant water level in tank or reservoir. Its frictionless operation is another important feature. There is no packing. The inner valve and piston are loosely fitted —action is free—it cannot stick.

Accurate regulation and certain protection are assured with Davis construction and design. The catalog gives the detailed description. Send for your copy.

G. M. DAVIS REGULATOR CO.
414 Milwaukee Avenue
Chicago, Ill.

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Powell Valves

are conspicuous for trouble-free and lasting service

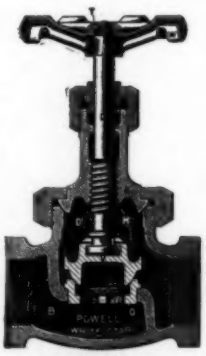


Fig. 102
Bronze Renewable Seat
Globe Valve

White Star Valves are obtainable in bronze or iron body with bronze mountings in globe, angle, cross, check and gate patterns.

Distinctive Powell features of union bonnet construction and non-corrosive "Powellium nickel-bronze" seats and discs insure longer service and ease in regrinding when necessary as well as renewable features of these essential parts.

All Powell Products insure the utmost in service under all conditions.

Reliable dealers with stocks most everywhere.

THE WM. POWELL COMPANY
2521-2531 Spring Grove Ave.
CINCINNATI, OHIO

was for noncompliance with the weight tolerance of 5 per cent above or below the ordered weight. In view of this the total of rejections cannot be regarded as other than low.

BRITISH CORRESPONDENCE

Market Conditions

Opinions have been expressed by several competent observers of paper trade conditions of late that the day of the small mill is passing, for many of the smaller mills are feeling the effects of competition from the groups and from the self-contained organizations who can use modern methods of sales-promotion, and are better equipped with modern machinery, and are able to increase their output as the necessity arises by the use of larger machines.

In the newsprint section, the mills catering to home consumption have been the best supplied with orders during the past month. Board of Trade returns indicate that export tonnage is not at its best; but the vast extensions which are being carried out in newsprint production appear to indicate that the outlook for the near future is good. Continental competition is still keen; but the section is holding its own in the home markets. The total export of British printings to Australia in January of this year were 158,878 cwt., against 176,898 cwt. for the corresponding month last year, while, in the case of New Zealand, the exports for January this year were 24,309 cwt., against 22,099 last year. Everything seems to indicate that our hold on the most important overseas markets for these materials is weakening, the main causes for our diminishing exports being equal preferential concessions to other paper exporting countries, the over capacity of the Canadian mills, and favorable freightage conditions to many competitors. In addition, of course, are the natural advantages with which the newsprint manufacturers in British Columbia are favoured.

In the woodfree section, conditions vary a great deal. Continental competition is keen, but home demands are fairly satisfactory. Here again, exports are diminishing yearly: the total exports of printings of all kinds for 1927 was 2,965,-829 cwt., against 3,365,125 cwt. in 1926, and 3,649,959 cwt. in 1925. On the other hand, imports of printing papers have increased progressively during the last three years.

As far as fine papers are concerned, there is an improvement in demand for commercial papers. In this section, the case of the small mill seems to be particularly amplified. The bulk of the fine paper trade of this country is getting into the hands of a small number of large and well organized concerns.

In the esparto section, trade is good. Many extensions and improvements to plant are being carried out.

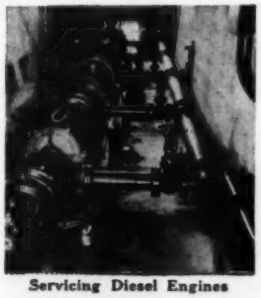
Publications Using Inferior Quality of Paper

A subject which seems to come up for perennial discussion has recently been revived by certain trade journals, and that is the inferior quality of the paper used for newsprint purposes to-day. The writer of the paper notes in the Newspaper World points out that rather more than half the quantity of the printing and writing paper that is made contains a certain proportion of mechanical wood-pulp, varying from 75 per cent in newsprint paper to about 20 per cent in rather better printing papers used for cheap periodicals, and even sometimes used in some of the better weekly journals. He expresses doubt as to whether many publishers give a passing thought to the durability of the paper itself, although the information their journals contain is a valuable record of the events, doings, and opinions of the times in which we live, and will, for this reason be much prized in years to come —if the papers are still in existence.

It has been suggested that, considering the large amount of valuable information regarding current events that the daily and weekly newspapers contain, a small number of each edition should be printed upon pure rag paper for filing purposes only, for experience is now beginning to prove

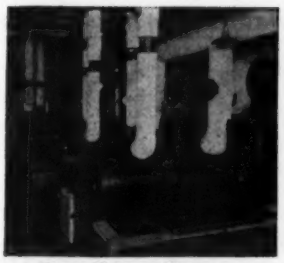
AMERICAN-MARSH PUMPS

Confidence

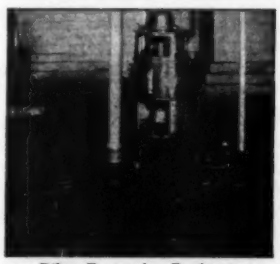


Servicing Diesel Engines

Furnishing Boiler-Feed



Steam Vacuum Pumps



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THROUGH the years — over forty now — American-Marsh pumping equipment for every conceivable paper mill application has enjoyed the confidence of its users.

It is equipment designed and built by a leader in the industry—by an organization whose entire energies and resources are directed toward the perfection of this one product—*pumps*. And whose personnel and plant facilities are adequate to meet the most exacting requirements.

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May we help you with your next pumping problem? Write for our Bulletins. Better still, have our engineers submit a specific recommendation covering your needs. We manufacture a complete line—both steam and centrifugal pumps.

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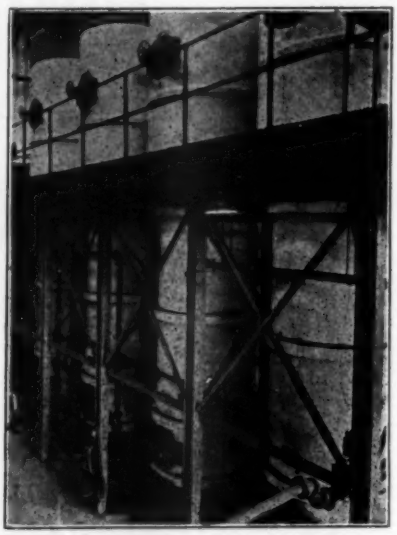

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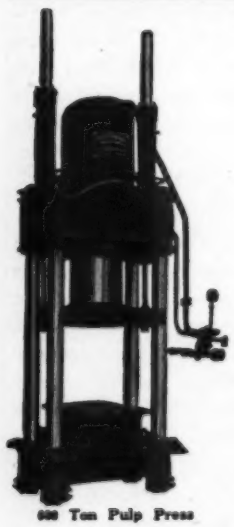
See page 314 in the 1925 Paper and Pulp Mill Catalogue



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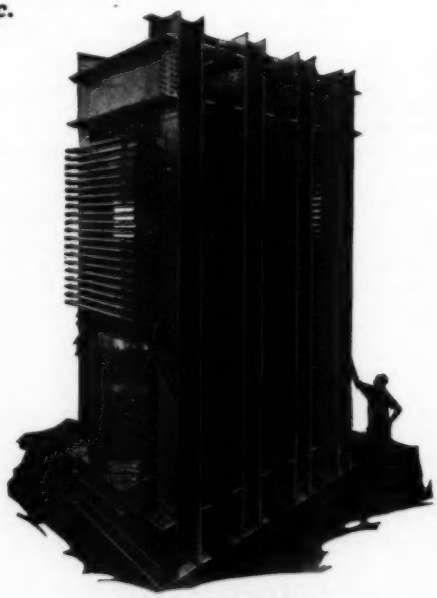
Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



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that the paper which was manufactured prior to the use of mechanical and chemical wood-pulp, when rags were the principal raw materials for all kinds of writing and printing papers, was of more durable quality and periodicals were kept on file with very little danger of deterioration. Indeed, from old documents still in existence, it is known that paper made from rags, properly cleansed and purified will last not only for generations, but for centuries.

OHIO NEWS

Miami Valley Superintendents Meet

The Miami Valley Division of the American Pulp and Paper Mill Superintendents' Association held its regular monthly meeting March 31, 1928, at the Hotel Manchester, Middletown, Ohio.

The program was conducted by the Vacuum Oil Company and was very practical and helpful. T. E. Dial of the Paper Mill Department of the Vacuum Oil Company, delivered an interesting address, in which he explained in detail the process of refining, the correct methods of oiling various kinds of bearings and also the kind of bearings for certain kind of work. Mr. Dial used lantern slides to illustrate his remarks.

Robert L. Eminger, national secretary of the association was present and outlined some of the subjects to be covered at the National Convention to be held in Pittsfield, Mass., May 31, June 1 and 2, 1928.

The next meeting of the association will be held in Hamilton, Ohio, April 28. A speaker from the Oliver Continuous Filter Company will explain equipment manufactured by this company, which is of interest to superintendents.

Dayton Concern Names New President

In a recent reorganization of the Dayton Globe Iron Works, Inc., Dayton, Ohio, H. K. Anderson, associated with the company for the past 25 years, was made president to fill the vacancy caused by resignation of R. R. Dickey, who retired on March 1 of this year.

The Dayton Globe Iron Works is one of Dayton's oldest concerns, having been started in 1863 by Stout, Mills and Temple, who manufactured water wheel turbines and pulp and paper machinery, a part of their product being shipped down the canal, which was then the chief means of transportation for freight. The company will continue the manufacture of paper mill machinery, together with several added lines, including the designing and building of special machinery. Mr. Anderson will be the active head of the company.

The Webster Manufacturing Co., manufacturer of elevating conveying and power transmitting machinery, with offices in Cincinnati, is moving its headquarters from 1914 Union Central Building, to 503 Chamber of Commerce Building. This office is in charge of L. A. Scheck, who is an experienced engineer and has been in the employ of the company for a number of years.

Stewart Inso Board Co. Elects Officers

At the first annual meeting of the Board of Directors of the Stewart Inso Board Co., held February 21st at St. Joseph, Missouri, A. D. Stewart was re-elected president, Charles Waddles was elected vice-president, I. A. Vant, treasurer, James A. Davis, secretary, and O. Robinson, assistant secretary-treasurer.

The board of directors consists of the officers with the exception of Mr. Robinson, and the following men: William Goetz, St. Joseph, Mo.; William Albrecht, St. Joseph, Mo.; J. J. Linn, Kansas City, Mo.; Ed. S. Lindas, Wichita, Kans.

The Inso Board plant has been in operation for about two months, turning out daily about 60,000 square feet of insulating board made from wheat straw. Technical difficulties have been overcome and it is expected the plant will soon be running to capacity.

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are procurable in Bronze, Iron and Steel, in all standard sizes, for all prevailing pressures and temperatures. The completeness of the line facilitates selection of the correct type for any service.

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One excellent 90" trim Rice, Barton and Fales Paper Machine complete with Marshall Drive; three 10 plate screens, wire 60' x 106"; two sets Presses; 24-48" diameter Dryers; two Stacks Calenders; Reel; Winder —complete in A-1 condition. Immediate delivery. Also Brownell Variable Speed Engine with Paper Machine. Also three 2,000 lb. Jones Cypress Wood Tub Beaters. Good condition. Full details and photographs upon request. All at very reasonable price.

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OUR MOTTO—"Service First."

FOR SALE—One slightly used Noble & Wood Mammoth Jordan together with 500 HP motor and coupling. It is also equipped with pulley for belt drive, if preferred. Price and particulars upon request. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

DRYERS FOR SALE—64 Dryers 48 in. dia. x 160 in. face. Also 6 Felt Dryers 36 in. dia. x 160 in. face. Address: Southern Machinery Export Co., 82 Beaver St., New York.

It Pays to Advertise Opportunities in this Opportunity Section

Paper Mill Machinery

FOR SALE

One 130" Moore & White four drum winder
One 72" Moore & White four drum winder
One 127" Warren two drum winder with slitter
One 129" Pusey & Jones two drum winder
One 122" Black Clawson duplex cutter (heavy)
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One 56" Moore & White sheet cutter
Two Deane triplex stuff pumps 12"x12"
One Variable speed engine 11x12 Chandler Taylor
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In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

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For Paper Working Machines

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New Catalogs, Books and Publications

S. F. Bowser & Co., Inc., Fort Wayne, Ind.—A four page leaflet announces Xacto Sentry, a new gasoline dispensing pump, which is equipped with Sacto Meter, which may be used for private plant garages or filling stations.

Farnsworth Company, Conshohocken, Pa.—A book of 96 pages that goes into the subject of heat reclamation in the drying of paper with elaborate diagrams and lucid description, has just been issued by this company, entitled "Save Fuel." As a treatise, the application of the Farnsworth system is exhibited in a most interesting and comprehensive manner. A number of engineering tables containing handy information of specific use in steam plant practice are a part of the book.

General Electric Co., Schenectady, N. Y.—This company's Thirty-Sixth Annual Report has just been released. The report is in attractive booklet form, and is a complete review of the transactions of the company during 1927.

B. F. Goodrich Rubber Co., Akron, Ohio.—"Paper Mill Rolls" is a bulletin designed to serve as a manual of information for papermakers on the subject of rubber covered rolls. A comparison of steam cost and felt cost with proper density of rubber covered rolls leads to a discussion of the density of rolls best suited for use on the different type paper machines operating on various grades of paper. There is also material emphasizing conditions of machine which will affect the life of press rolls, importance of balance of paper mill rolls, the Vulcalock process, the plastometer, the grinding and crowning of rubber rolls, as well as general information of value to the pulp and paper mill operator. Copies on request.

International Paper Monthly, International Paper Co., New York City.—The March issue of this publication is a Newfoundland number carrying splendid views and maps of the mill property and woodlands recently acquired by the company. An excellent map of Newfoundland, in which the properties of the International Paper Company and its subsidiaries are indicated in colors, prefaces the issue.

Besides news and notes of the Cornerbrook mill and other mills and properties of the company, this admirable issue contains a survey of the expansion of the company through water-power development and extension of construction in many parts of North America. There are some really beautiful pictures of scenery in Newfoundland in the vicinity of Cornerbrook. The literary features include accounts of the discovery of Newfoundland and the romance of its development. Portraits are shown of Governor and Lady Allardyce, in addition to other notable personages in the political and industrial life of this, Great Britain's oldest colony. Altogether a highly creditable publication on which the editor, F. T. Harris, may be congratulated.

Lawrence Pump & Engine Co., Lawrence, Mass.—The Lawrence Vortex Sand & Dredging Pump is described in Bulletin D-28. There are figures with complete description and tables showing the heads, speed and horsepower of the different styles.

Lincoln Electric Co., Cleveland, O.—An attractive booklet is entitled Lincoln "Linc-Weld" motors. Each step in the manufacture and assembling of these motors is clearly explained and illustrated with figures and cross section views. There is a chapter on Special Motor Applications. For comparison there is a curve speed torque curve, which figures have been taken from actual tests.

National Association of Gummed Tape Manufacturers, 18 E. 41st St., New York.—This association is circulating an attractive pamphlet setting forth the advantages of gummed tape for the sealing of fiber boxes and other containers. It is printed in three colors—black, green and yellow, to illustrate various methods of applying gummed tape to packages and boxes. A half-tone portrait of Thomas A. Edison is used as a frontispiece, the wizard of electricity being credited with the invention of gummed tape. Freight, express and postal rules governing the shipping of fiber containers are given.

Superheater Company, The, New York City.—An attractive booklet entitled "Elescooperation," gives interesting bits of information about Elesco superheaters for power plants. A brief outline is given of the company's organization and the research work carried on by its engineers; also the features and performance of Elesco superheaters.

U. S. Sanitary Specialties Corp., Chicago.—The third edition of this company's catalogue illustrating Soaperior liquid soap dispensing systems and other sanitary equipment for public buildings has just been received. Diagrams and illustrations of various installations of the Soaperior soap dispensing system are shown.

BOOK REVIEWS

Waterproof Paper, Papier Zeitung, Berlin, publishers.—A second, revised edition of this work by Hermann Wandrowsky, has recently been issued, in form of a paper bound booklet of 56 pages, in which the subject is considered under five main divisions as follows:

1—Waterproofing by filling the pores of the paper with paraffin, wax or oil.

2—Making the paper waterproof by precipitating water-repellent substances on the fibers, either by:

(a) Impregnation with aluminum acetate

(b) Impregnation with insoluble colloidal substances, as glue or casein treated with formaldehyde or a bichromate

(c) Treatment with solvents for cellulose like ammoniacal copper oxide or with sulphuric acid to make parchment paper

(d) Impregnation with metallic oxides and insoluble metallic soaps

3—A chapter on the testing of waterproof properties of papers.

4—Machinery employed for treating paper to make it waterproof and a brief account of patents and articles pertaining to the subject that have appeared in the literature.

5—A summary of literature and patents relating to the waterproofing of paper that have been published since 1916. This will be found useful for reference to previous work on the subject. The price of the book is a mark and a half.

The World's Woodpulp Market, Carl Hofmann GmbH., Berlin, publisher.—This book, bearing the title **Die Papierholzversorgung,** gives an account of the export and import markets for woodpulp and comparative prices in the various countries.

Papierhandel, Papier Zeitung, Berlin, publishers.—This is a work intended for the information of paper salesmen and contains particulars of nearly every kind of paper manufactured, together with details of pulp and paper manufacture which a salesman is expected to know. An interesting assortment of German paper specialties is bound in at the end of the volume. Price, ten marks.

Publications of the German Technical Ass'n, Otto Elsner, Berlin, publisher.—The publisher of the **Papierfabrikant** has issued in reprint form as a single volume, Engineer H. Rappold's Die Theorie des Antriebs und Kraftbedarfs von Papiermaschinen, and Erik Oeman's Harzleimung von Papier. The book constitutes No. 18 of the Papers of the German Association of Cellulose and Paper Chemists and Engineers. Rappold's treatise is concerned with the drives and power requirements of paper machines, and is one of special interest to engineers because it gives mathematical details of the difficult and complicated problems connected with the subject, in addition to practical consideration of design.

The entire history of rosin sizing is covered in the second paper by Erik Oeman, a professor in the Technical High School of Stockholm. This occupies 32 pages, exclusive of nine pages of references to the literature. The bibliography starts with the classical work of M. Fr. Illig and closes with a reference to the modern contributions of R. Lorenz. Included among the references are several pertaining to American work, like that of W. J. Lawrence on the sizing of kraft paper, and C. F. Sammet's work on the quantitative estimation of rosin in paper and the preparation of rosin sizing, just to mention two of the more prominent American contributors to the literature of paper sizing. M. J. Griffin's paper on rosin sizing, which appeared originally in one of the journals of the American Chemical Society is also recorded.

Professor Oeman is recognized as one of the foremost authorities on the chemistry of rosin sizing and his articles are quoted frequently in the educational journals of the paper industry. The price is four marks.

Here is a

Stock Pump

Developed by Paper Mill Pump Specialists to handle stock up to 5% consistency and over, with unusual efficiency.
It is a "BALL BEARING PUMP" with the ball bearings mounted in horizontally split housings which are widely spaced to give smoothness and stability in operation. Notice the HORIZONTAL SPLIT CASING and large hand hole in suction. NON-CLOGGING IMPELLER.
Ask for circulars and let us consider your requirements.

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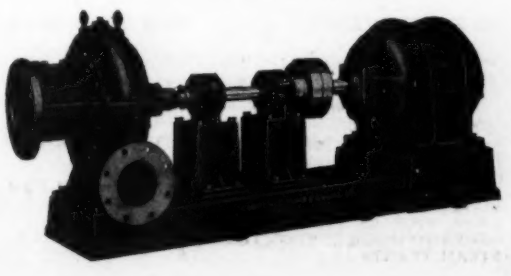

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30 CHARLES RIVER ROAD CAMBRIDGE, MASS.

Mosinee Paper Mills Co. New Bond Issue

The Mosinee Paper Mills Company, formerly the Wausau Sulphate Fibre Company, Mosinee, Wis., has put on the market $1,700,000 first mortgage 5½ per cent gold bonds out of an authorized issue of $3,000,000. Proceeds will be devoted to the retirement of the entire outstanding issues of 7 per cent gold notes and cumulative 7 per cent preferred stock, thereby effecting a saving in fixed charges and income taxes estimated at $30,000 a year.

Net tangible assets applicable to these bonds, according to the company's balance sheet of December 31, 1927, will be over $4,047 for each $1,000 bond. Earnings available for interest and income taxes, after depreciation, are certified to have averaged for the last five years over 4.5 times the maximum annual interest on the bonds.

The company is a complete pulp and paper making unit, having six digesters and three fourdrinier paper machines with a capacity of 100 tons a day, and owns a 4,380 h. p. hydroelectric station at Mosinee which furnishes seventy per cent of its power requirements. The appraised value of this equipment is $4,250,000. It owns also 37,342 acres of high-grade virgin timber reserves in northern Michigan, which is said to be worth considerably more than its book value of $1,680,000.

Mosinee Paper Mills Company was incorporated in Wisconsin in 1910 as the Wausau Sulphate Fibre Company, having been organized by the late Olai Bache-Wiig, who introduced the sulphate process on the North American continent. The company, aside from being the first unit in the United States to manufacture sulphate pulp and paper, has been the leader in developing a light weight paper, and in originating new, specialized uses for sulphate paper. The name of the company was changed in February, 1928, to identify it more closely with its nationally known trade-mark and trade name.

The company's record shows steady progress, having produced 26,306.6 tons in 1927, and the net earnings were $589,888. Officers and directors are: F. P. Stone, president; A. P. Woodson and John F. Ross, vice-presidents; Howard L. Dessert, secretary; A. L. Kreutzer, treasurer; Karl Mathie, chairman of the board; and Geo. L. Ruder, H. M. Thompson and A. E. Beebe, directors.

Credit is due Mr. Norman S. Stone, son of the president, who succeeded Mr. Olai Bache-Wiig as general manager after the latter's death on Armistice Day, 1924, for the splendid ability he has displayed in the administration and operation of the company since the death of Mr. Bache-Wiig.

Bond Papers Put on Market

In line with its policy of diversifying its products as far as possible, International Paper Company has put on the market high-grade, tub-sized, and water-marked bond papers, known as Adirondack Bond and Adirondack Ledger.

Two years ago the company took the first steps leading to the production of this grade of paper, and for more than a year under the guidance of experts conducted tests at the mill and at its Bureau of Tests to produce the desired sheet. Located in the Adirondacks, the mill draws from timberlands in that region the wood used in the manufacture of this grade of paper.

Stephens-Adamson Open New Offices in Canada

The Stephens-Adamson Mfg. Co. of Canada, Ltd., has opened branch sales engineering offices at Toronto, Ontario and Montreal, Quebec. The establishment of these offices follows a successful sales policy for extensions which has proven so satisfactory in the United States organization.

The Toronto office is located in the Bank of Hamilton Bldg., with A. F. White in charge. George H. Smith is in charge of the Montreal office which is located in the New Birks Bldg. These men are engineers of ability and have had experience with conveying machinery which enables them to render valuable assistance to manufacturers throughout Canada.

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Portland is in the heart of the big timber region of the Pacific Northwest. Has an abundance of good water together with a plentiful supply of cheap hydroelectric power for manufacturing purposes. Good ocean and railway shipping facilities, a mild climate, and a fair supply of skilled labor, practically all of which is non-union.

I would be pleased to serve you in the location, design and construction of that new mill of yours.

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Which absolutely control the drying of the sheet. Installed on sixty days' trial

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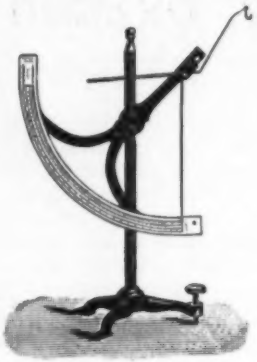
World Standard Paper Testers



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The folding test has become standard for bonds, ledgers, and Kraft papers.

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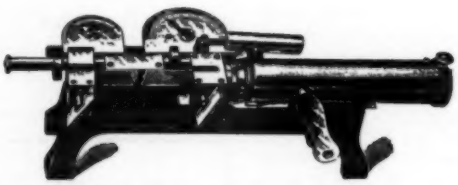
Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



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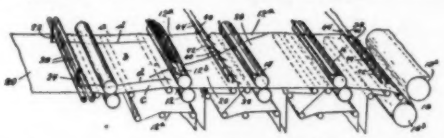
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Papermaking

THE continuity of the paper web in a papermaking machine is preserved by a process consisting in directing streams of water downward on the papermaking wire, when a break occurs in the sheet. Thus longitudinal sections are



formed in the moving paper web. One of these sections contains the break and the other is free from the break. The section, which contains the break, is passed to waste while the free section is continued through the papermaking machine. C. N. Merrill, assignor, Great Northern Paper Co. United States Patent No. 1,662,200.

Retention of Clay in Paper

THE amount of clay retained by paper has been indicated to vary considerably according to the manner in which the individual investigator has carried out his work. It was thought advisable to make a number of experiments with clay to determine what the retention is. Two clays were used. Sedimentation tests were made with them. Five and ten per cent suspensions in water of a depth of nine inches were allowed to settle in glass cylinders. The bulk of the finer grade of clay (English origin) was uniformly fifty per cent greater than that of the foreign clay. The tests were carefully made and time was given for conditions to become stabilized on the papermaking machine before samples of the paper were taken.

These samples were analyzed and allowances were made for the moisture content of the clay as filled into the beaters and for the loss on incineration so that all weights represented are on the bone dry basis. Retention of clay was calculated from the percentage of clay found in the paper and the amount supposed to be added to the beater, the proportion found in the stuff in the chests and the proportion found in the stuff in the sand-traps or save-alls.

The results of these experiments are given in the following tabulation:

Substance, grams per square meter	68.5
Clay added to the beaters, per cent	32.0
Clay in stuff in chest, per cent	31.7
Clay in stuff in sand traps, per cent	42.7
Clay in finished paper, per cent	25.8
Clay retained (based on the weight of clay in beaters) per cent	80.7
Clay retained (based on the weight of clay in the stuff chest), per cent	81.3
Clay retained (based on the weight of the clay in the sand traps)	66.3

These figures are the average of the results obtained in the two sets of experiments.

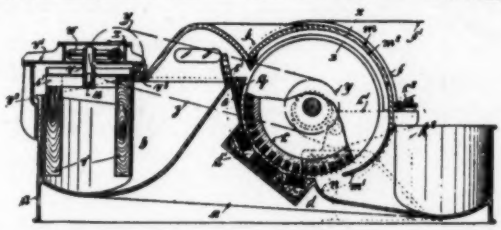
The results of the experiments point to the conclusion that the retention of a loading material should be based on the amount put into the beater, as this is the only basis which directly affects the accounting side of a paper mill and takes into account variations in furnish and in the efficiency of the backwater recovery system. Also on this basis the factor of most importance in deciding the retention of a loading material is the efficiency of the machine backwater recovery system, and that where this is perfect the retention will be one hundred per cent. F. W. Bailey, The Paper Makers' Monthly Journal, 1928, pages 66 to 68.

New Sizing Method

A NEW method of sizing paper has recently been introduced from Swedish sources into various countries of Europe under the name of the Delthirna process. The method consists in moving a solution, containing approximately five grams of sodium hydroxide per liter by means of a slow-moving piston pump through a battery of cylindrical containers, which contain small pieces of rosin. As long as the temperature does not decrease below 59 degrees F, a rosin size is formed which consists of a solution of sodium rosinate in a concentration corresponding to forty grams of rosin per liter. The solution of rosin size is used in the ordinary manner in the beater, and when the proper quantity of aluminum sulphate is employed a paper of high sizing quality is obtained. It is claimed that there is a saving of rosin amounting to thirty per cent, and, in many cases, to as much as fifty per cent, when the process is carried out under these conditions. The advantages of the new method are stated to be the constancy of the concentration of the rosin solution (one-half a per cent variation). The process is carried out in the cold, hence, the expense of heating the rosin is avoided. Labor costs are decreased, a rosin milk of high degree of cleanliness is obtained. There is no deposit, no need of pipes, valves and the like. The rosin is filled into the vessels once a day and this requires about one to one and one-half hours. Der Papierfabrikant, 1928, page 91.

Pulp Beater

THE pulp beater is provided with the usual tank and longitudinal midfeather. The beater roll is shown in the accompanying illustration at (1) and this roll is located between the midfeather and one side of the tank. The bearings



for this roll are shown. Levers are arranged to carry these bearings and these levers are adjusted by means of a worm and worm wheel mechanism. Balance weights are provided for regulating the levers and the roll. The backfall (q) lies close to the beater roll and extends at a slight angle above the level of the roll axis. A bedplate is shown at (d) and extends backwards towards the backfall through an arc of approximately 75 degrees. A cover (m) is provided closely fitting and covering in the roll and also covering in the backfall. That part of the cover which fits the roll is provided with angled or sloping faces opposite the space between itself and the roll ends and on the side next the backfall it has

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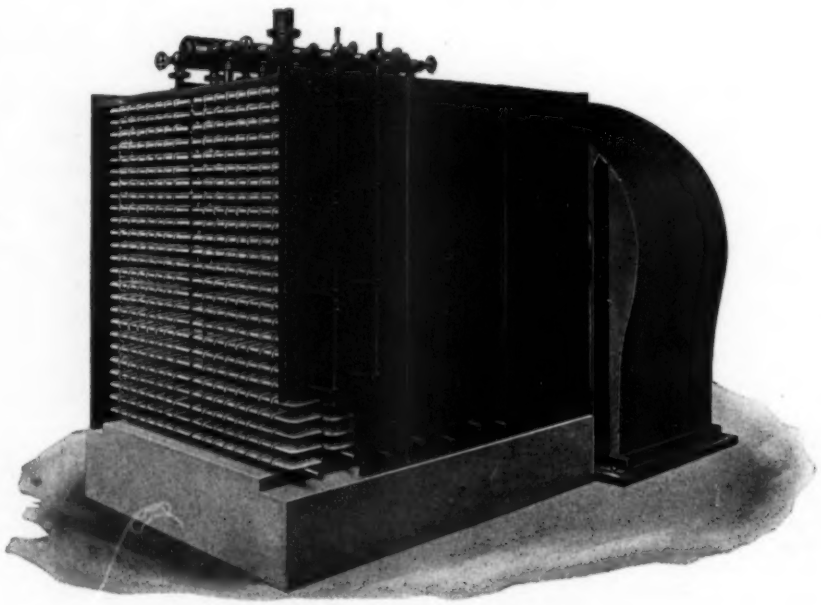

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filling strips. The cover extends down to a point near the floor of the tank. S. Milne. United States Patent No. 1,662,466.

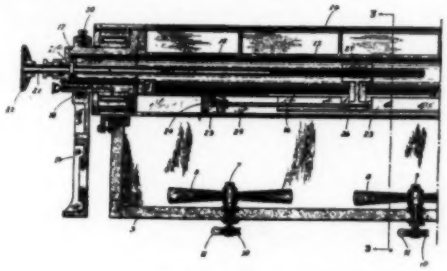
Treating Waste Paper for Remanufacture

THE ink is removed from the waste paper through the formation of an insoluble scum by treating the pulp of the paper which is to be freed from ink with a very weak alkaline solution of carbonate of soda in ordinary water. For example, a dilution of one in 800 is used. The paper mass is heated and agitated throughout the treatment to produce a scum which carries off the pigment. The soap which is formed is rendered insoluble, if necessary, by the addition of a metallic salt or an alkaline salt which effects the salting out.

The insoluble scum may be produced by decomposing the soap formed with an acid so as to liberate the fatty acids of the soap, which fatty acids are insoluble in water and are adapted to collect on the surface as a scum by reason of their low density. The agitation may be effected by boiling or by an air blast, or by both, applied during the mixing or stirring. A certain proportion of soluble soap may be added to increase the precipitation or salting out, and the capillarity of the solution employed may be varied by the addition of gelatine, albumen, casein, glucose and the like, and loading and bleaching agents such as bisulphites, hypochlorites and the like, may also be added. L. Grenaudier, British Patent No. 282,829.

Papermaking Machine

THE papermaking machine consists of a vat, shown at (3) in the accompanying illustration, through which a movable endless wire passes. The contents of the vat are constantly agitated by means of the agitating devices shown at



(8). The fibers are made to deposit on the endless wire that moves through the vat, that is one one face of this wire. Thus a web of paper is formed. Means are provided for regulating the quantity of fiber that is attracted to the moving wire and there are also means located within the suction roll in the vat to regulate the width of the sheet formed. J. W. Bassington, Port Arthur, Ontario, Canada, assignor, The Paper and Textile Machinery Co., Sandusky, O. United States Patent No. 1,660,643.

Beater Studies

A DIFFERENCE must be made between the cutting action and the slow beating effect. Beating to produce slow stock is affected principally by the total thickness of the beater roll knives and of the bedplate knives, and it has nothing to do with the number of knife cuts. Good circulation of the stock mixes it well and results in uniform beating and prevents contact between the knives due to complete removal of the stock between the beater roll and the bedplate. The rotary speed of the beater roll may vary between 7.5 to 15 meters. The beater must be in as little contact as possible with the stock as it enters the beater. On the other hand, subsequent contact must be sufficient to reduce the paper stock into the condition of fibrillae. Reduction of the contact angle of the beater roll between the stock and the bedplate to 90 degrees is an improvement over the old construction in which the angle was from 150 to 180 degrees. The bedplate is built as wide as possible and extends over approximately 75 degrees of the circumference of the beater roll. The angle of inclination amounts to 15 degrees, so that the first knife comes directly under the middle of the roll.

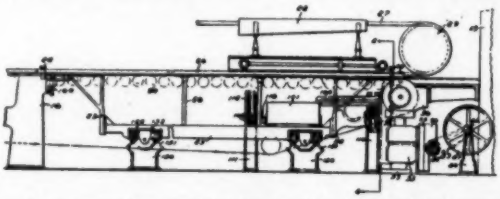
It is stated to be erroneous that slow stock cannot be obtained with a heavy beater roll. The important consideration is not the weight of the roll but the distance between the roll and the bedplate. Temperature increases in the mass being beaten were observed as follows:

Finest silk paper from rags, 8 hours.....51 degrees C.
Kraft paper, two hours, ten minutes.....20 degrees C.
Kraft paper, two hours, ten minutes.....17 degrees C.
Sulphite, one hour, 40 minutes.....13 degrees C.
Parchment paper, 2 hours.....16 degrees C.
Esparto, 3 hours .....23 degrees C.

Milve, The World's Paper Trade Review, volume 87, 1170-6 and 1258-60.

Papermaking Machine

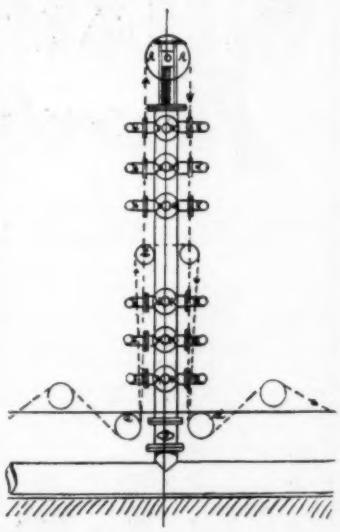
THE machine comprises the usual shaking forming section of the fourdrinier type of machine. A supporting standard is provided and this also carries a curved load-receiving sur-



face. A co-operative sustaining section is provided upon the shaking forming section. Means are also present for acting on the standard so as to effect the shaking of the forming section. The aforementioned surfaces are constructed to cooperate in such a manner that rolling motion is effected with respect to each other during the shaking of the forming section. Means are also provided for controlling bodily movement of the forming section with respect to the standard. H. L. Kutter, Hamilton, O. assignor, The Black-Clawson Co., Hamilton, O. United States Patent No. 1,662,929.

Parchment Paper

THE stock from which the paper is made is essential in determining the quality of the parchmentized product. A good grade of stock made from rags and wood is also used for certain kinds of parchment paper. The beater must be built so as to give the best results with this brittle stock. This refers particularly to the bedplate and the knives of the beater roll. The pulp beater should be provided with a washing drum so that the stock may be washed in the same beater in which it was beaten. After ten minutes of beating, the roll is allowed to remain fixed on the bedplate, and the beating conducted to produce a slow stock. When tender cotton or too soft wood pulp is used and the stock then is itself too soft, the beating is carried out more slowly, but the finished stock is worked up into a thicker paper. If it is, however, found that the stock gives too hard a paper on the paper-making machine, then the conditions of beating are reversed and the stock is beaten into a more slow condition and is finally manufactured into thinner paper.



The washing machine is shown in the accompanying illustration. The great advantage of the apparatus built in this

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We are running at a speed of 280 feet with five-sixteenths shake on the breast roll, running at 320 shakes per minute. I expect to get the speed up to 300 feet or over next week.

The sample sheet sent you is 40# basis weight and has a Mullen test averaging 42, machine tensile 36 cross tensile 22, and a tear each way of about 80 grams. We consider the sheets better for our purposes than the paper we have been buying from two different mills the past year.

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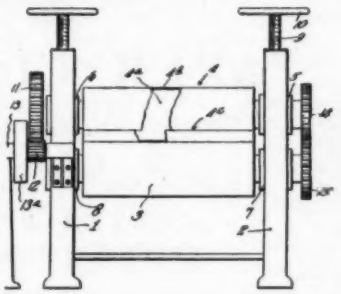
form is that it takes but little room in the mill and four machines of this character will produce from 8800 to 11,000 pounds of parchment paper a day, and, furthermore, wash this paper clean of the parchmentizing liquid. The advantage of this machine also is that various thicknesses of parchmentized paper can be treated on it. Thus, thin papers, such as silk parchments, are led over the guide rollers (c) from (a) to (b) and finally to (d). When thicker papers are being processed, they are led over the large driving rollers (A) from (a) over (b). It has been found that the washing of the parchmentized paper is carried out effectively with this apparatus and that water is saved. R. Fritsch, Wochenblatt fuer Papierfabrikation, year 1928, number 3, pages 63 to 67.

Machine for Finishing Paper

THE machine comprises a pair of pressure rolls, shown at (3) and (4), each of which includes a substantially inflexible, non-yieldable, body portion and a flexible and comparatively fragile paper marking element adhesively secured throughout its area to the periphery of one of the rolls, so as to act as an integral part of the surface. This is shown at (4b). Gears are furnished as may be seen at (11), (12), (13) and (14) which interengage and thus effect the movement of the rolls. The peripheral speed of the rolls is, therefore, maintained the same in each case. Thus any frictional action which takes place between the rolls and which would be sufficient to destroy the fragile marking element is avoided. J. Speed, assignor, Strathmore Paper Co. United States Patent No. 1,660,978.

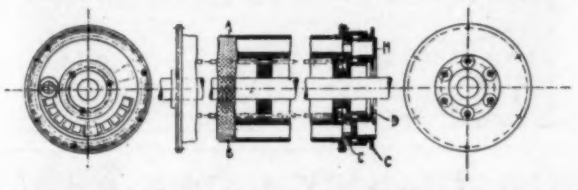


Dehydrating Wet Felts

THE apparatus consists of a cylinder with a diameter of approximately one to two feet according to the speed of the felt, and a second smaller cylinder is found within the larger cylinder. The space between the cylinders is divided into 24 to 36 sections by means of partition walls one to three inches high. Inasmuch as the casting of large cylinders with sections is a difficult operation, the felt suction rollers are made from individual castings, which are arranged on a common shaft and fastened together by bolts. Perforations are bored through the smooth outer surface of the large cylinder.

The front of the cylinder is provided with the cylinder cover plate (H), which has a suction hole corresponding to each one of the sections in the apparatus. The suction head, which is used for sucking out the air and water mixture is carried in two guide bushings (C) and (D) located on the cylinder cover. The suction head is provided with a transverse groove and a small plate fastened to the end of this channel which is placed tightly against the suction perforations in the cylinder head.

The operation of the apparatus is simple. The felt, washed by means of a current of water, is carried into the apparatus

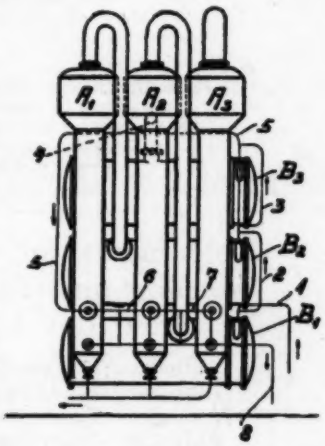


and covers the flat surface of the cylinder, which rotates due to the speed of the felt. The felt thus passes over the openings in the surface of the cylinder and the water is drawn out of it. The removed water flows into the space between the two cylinders and passing through the various sections it reaches the suction head which is connected with a suction pump. Inasmuch as the action can take place at a definite speed of rotation of the cylinder, at a diameter which is not too large and at a definite quantity of water so that not all of the removed water can run off through the cover, then the excess water is easily removed during the operation of the apparatus through the openings in the sections, which, being connected with the outside air, are not subjected to suction at the given moment.

The advantages of the apparatus are, first, that it enhances the life of the felt; second, that the felt remains in the same condition as when it is used; third, that the felt suction roll can be easily shifted into a position of rest by lifting a lever; fourth, that the installation is simple and inexpensive; fifth, that inasmuch as the cylinder is formed of individually cast sections, it can be made in whatever length is best suited for an individual purpose; sixth, that the surfaces of the parts subjected to friction are not pertinent, due to the application of suitable lubricants, and, finally, that when a high vacuum is employed this felt suction roll can be used as a couch roll. Russian Patent No. 12,800, issued to G. Gasucha. Zellstoff und Papier, 1928, pages 91-2.

Multi-Stage Evaporation and Concentration of Liquids

THE process consists in causing the liquor, which is being evaporated, to pass through a series of preheaters, then into a number of containers which are not heated and in which the pressure is released, so that the liquor is cooled by the evolution of steam, that is due to the latent heat in the steam. The steam that is evolved in these containers is then removed and used to heat the preheaters.



The installation consists of three pressure-released vessels (A_1), (A_2) and (A_3) and of three preheaters (B_1), (B_2) and (B_3). The liquor which is being concentrated is pumped through the series of preheaters by means of a circulation pump and the liquor enters the preheater (B_1) through the pipe (1), leaves the preheater through the pipe (2) and enters the preheater (B_2), leaves the latter through pipe (3) and enters the preheater (B_3). Steam is furnished to the preheater (B_3) through the pipe (4), while the other preheaters are heated by the hot vapors from the pressure-release vessels.

This arrangement makes it possible to heat the liquor up to a temperature which corresponds to the pressure of the vapor that is used for heating purposes. The preheated liquor is removed from the preheater (B_3) through the pipe (5) into the pressure-releasing chamber (A_1), where it is subjected to the first after-evaporation treatment. The evaporated liquor then runs through the pipe (6) into the second pressure-releasing chamber (A_2) where again a portion of the water in the liquor is evaporated. The remaining liquor then passes through the pipe (7) into the pressure-releasing chamber (A_3). The power parts of the pressure-releasing chambers are connected through the pipe (8) with the circulation pump, so that the liquor after cooling again starts its course through the apparatus. Atlas Werke A. G., Bremen, Germany. German Patent No. 455,070.

Rags and Their Preparation for Papermaking

THE various types of new rags are distinguished and described, such as new white linen cuttings, new white cottons, new unbleached linen, new unbleached cotton, new lace curtain cuttings, new light prints as well as various types of old rags. The general methods of treating the rags to prepare them for papermaking are then described in considerable detail. Interesting information is given on the

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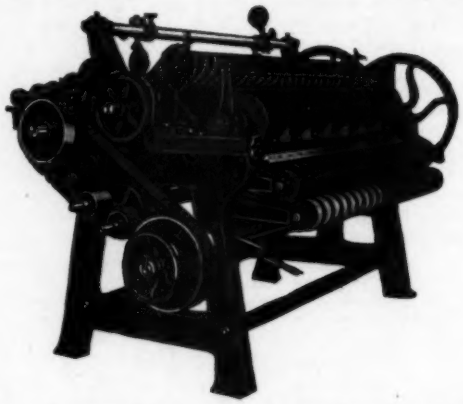

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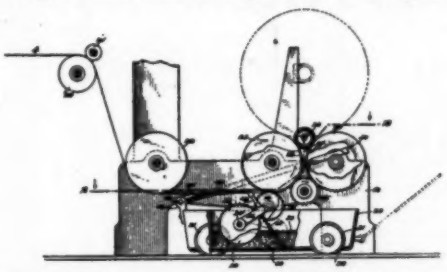
conditions that are required for the efficient treatment of the rags by means of alkali. Washing practice also receives detailed attention. While washing, the rags are "broken in" by the action of the breaker roll on the bedplate. The principle of the operation is to undo the work of the textile manufacturer and brush out the rags into threads again. Irreparable damage may be done to the rags in the breaker if the operator is careless in his handling of the roll. He must grip the rags firmly at the start in order to tear them up, but as soon as this has been done the roll should be eased off and the stuff brushed out carefully.

The details of the bleaching operation are also given. The usual concentration of the bleach liquor is six degrees Tw. It is the practice in some mills to run the bleached stock into steeps or drainers, and there allow the bleach to exhaust itself. This method has an advantage, as it allows the bleaching in the potcher to be more carried out, and it also enables the whole bleaching action of the liquor to be exhausted so that there is no waste. However, large tanks are required. Furthermore, the real disadvantage of the process is that it allows the bleached rags to become contaminated with dust and dirt which are always floating around. The labor cost is also high.

The rags are beaten quickly to give bulk and a good clear watermark which are requirements in producing handsome writing papers. The length of the fiber is sacrificed and the fibrillation is of little importance as great strength is not demanded. Papers from cotton rags which are beaten quickly, besides being bulky are also opaque. The more prolonged and drastic the beating, the poorer the opacity, and cotton papers are always more opaque than those made from linen or containing a portion of linen. R. H. Clapperton, The Paper Makers' Monthly Journal, Feb. 15, 1928, pages 68 to 71.

Forming and Handling Paper Rolls

THE paper winding mechanism has two drums, which are spaced apart, as may be seen in the accompanying illustration. Upon these drums a mandrel for winding the paper



may rest. Devices are provided for driving the drums. There is also an adhesive-applying device, shown at (29) which applies a coating of paste to the paper as it is being wound up on the roll. United States Patent No. 1,661,326.

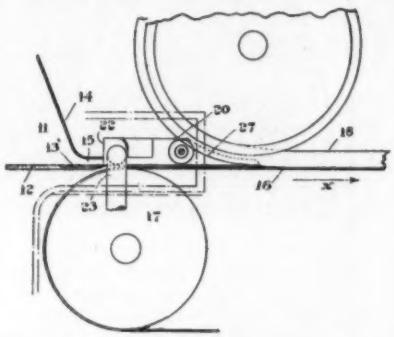
Ozone in Bleaching Paper Stock

EXPERIMENTS have indicated that paper stock treated with aqueous ozone solutions is bleached a perfect white without there being any injury to the stock itself. The ozonators which are used to produce the ozonized waters are described. The stock which is to be bleached is placed in a vat provided with an agitating apparatus and consisting of six sections. The ozonized air is forced through these compartments and a portion of the ozone content of the air is thus removed, the latter being returned to the ozonators. This arrangement prevents loss of ozone, and saves electricity, due to the constant circulation of the ozonized air. At the same time, it insures uniform treatment of the stock with the ozonized air. Furthermore, it makes certain that the pulp is completely bleached, which is accomplished by the continuous movement of the stock.

There are certain important advantages of the ozone bleaching process over the usual chlorine process. The loss of pulp values is prevented for the reason that there is absolutely no chance that the cellulose will be hydrolyzed and thus converted into derivatives of lesser value. Furthermore, when the temperature of bleaching is maintained at the proper point, and when the flow of ozonized air through the mass of pulp is controlled, and when the correct percentage of moisture is maintained within the pulp mass, then there is no danger that the fibers will be weakened due to the formation of oxycellulose. A product is obtained from this process which is stable and resistant to all the various influences to which paper stock and paper are subjected, and this is accomplished without the necessity of prolonged washing, inasmuch as the pulp mass does not contain any residual chemicals. It is also indicated that the strong bacterial action of ozone has a favorable effect in destroying influences which may tend to impair the pulp or the paper which is made from it. A. Matagrin, Papeterie, volume 49, numbers 3 to 6.

Stock Deflector for Flow Boxes in Papermaking Machines

THE regulator which controls the flow of the pulp on to the wire is located between the slice plate and the deckle straps and above the wire. It is provided with means for de-

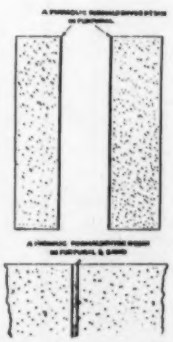


flecting the surplus stock from the wire of the machine. United States Patent No. 1,660,274.

Wire Cloth for Papermaking

THE junction of an endless wire cloth used in papermaking machines and the like is made by incorporating fusible weft wires in the woven body to form the seam and cutting the ends short near these special wires so as to form a real channel. The fusible wires may comprise a core of non-fusible metal coated with fusible metal or a combination of two wires, one of non-fusible metal and the other of fusible metal may be used, the joint being made by fusion. British Patent No. 283,180. R. Franck.

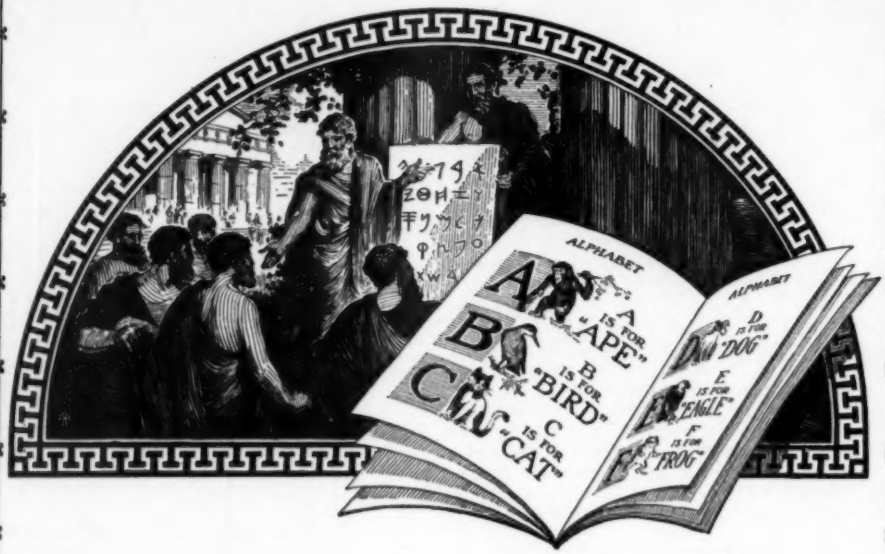
Cementing Pulpstones



A PULP grinding stone consists of several parts with their adjacent surfaces coated with a solution of a resin, such as a phenol-formaldehyde condensation product. The artificial resin is dissolved in an organic solvent, such as furfural and this solution is mixed with sand. The application of the cement is indicated in the accompanying illustration. H. O. Keay, assignor, Laurentide Co. Ltd. United States Patent No. 1,655,371.

Producing Wood Pulp

WOOD chips, wood waste of any sort is treated with sodium hydroxide lye to soften the stock, the caustic solution having a concentration of 15 degrees Be. and containing either sodium sulphide or sodium sulphate. After the wood has been softened in this manner, it is subjected to mechanical handling until the fibers are at least loosened up. The product, obtained in this manner is a corklike softness, can then be shaped into form. Edge mills with bedplates are used for producing the stock. The mechanical treatment is carried out in this apparatus until the remaining ingredients of the wood are decomposed into fibers. The pulp is then bleached in this state. G. Gurtner, Swiss Patent No. 120,266.



The A-B-C of Written History

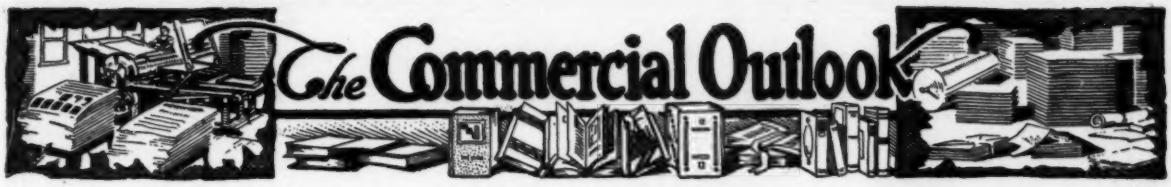
EVERY child goes through the alphabet age. So did the human race in its childhood. Herodotus wrote of "Cadmus, the Trojan" who is credited with having introduced the Phoenician alphabet among the Greeks. The latter, having learned to make symbols represent sounds, would write their first line from right to left after the fashion of their Semitic teachers. Then the second line would run from left to right, and so the inscription would wind back and forth. Soon, however, Greek writing settled down to a left to right order.

The Greek characters were changed by the Romans, whose ideas of letter formation we have modified very little even to this day.

Cadmus, whether a real person or merely a name to represent Phoenician culture, deserves our thanks. For with the successor to his alphabet the thoughts and experiences of today go into more than one hundred languages—on millions of sheets of paper—and tomorrow spread their benefits before a new generation.

HAMMERMILL PAPER CO.

ERIE, PA.



New York, April 1, 1928

ACTIVITY in the paper market is on a fair scale, and there has been some expansion—of a rather seasonal character—during the last several weeks. It is apparent that consumers, converters and buyers in general are practicing a good deal of care in acquiring supplies, that they are bent on covering definite and direct needs chiefly, and are in no mood whatever to anticipate requirements, yet demand in the aggregate measures up well with that ordinarily witnessed at this time of the year, and the steadiness with which demand develops is the source of much satisfaction to paper manufacturers and merchants.

Moreover, the outlook for business in paper is regarded as favorable by a big majority in the trade. It is recognized that few users are carrying stocks of paper of any kind of consequence, and that, from all indications, dealers and distributors also are going along with smaller stocks than they have been accustomed to have in the past, which should result in a continued good call for supplies over the next few months or until the usual quieting of the market in the summer. The policy of buyers at present is just about doing away with the spurts of demand which formerly were a feature of the paper business. Consumers and merchants evidently have learned through experience that they are enabled to get supplies without delay or difficulty whenever the need arises, and consequently they are placing orders only to satisfy current requirements—which has one very beneficial effect on the market since it leads to steadiness of demand, if nothing else.

There are signs that consumption of paper—in an aggregate sense—is as heavy as usually is noted at this period of the year. Perhaps some kinds of paper are moving in relatively better volume than others, thus making for quiet spots in the market, but business—gauged from the standpoint of volume—is not bad; instead, it is regarded as good by a large majority in the trade. The main trouble is that the margin of profit on which paper is being produced and marketed is narrow, so decidedly so that most manufacturers and jobbers are not realizing the amount of gain that they should, and it is on this score that the greater part of the complaint concerning prevailing market conditions that is heard is made.

Latest statistical reports indicate that the industry is in a healthy position as well as enjoying comparative broad activity. Production of paper of all kinds in the United States in January amounted to 551,689 tons, showing a gain of 4.5 per cent over the 527,447 tons produced in the preceding month by identical mills, according to the monthly summary compiled and issued by the American Paper and Pulp Association and affiliated organizations. Paper mills as a group produced at 81.6 per cent of their rated capacity in January, and shipped out a total of 542,157 tons of paper of all grades in that month, contrasted with 528,997 tons in December last. Stocks at mills of all grades aggregated 253,029 tons at the end of January, against 250,311 tons a month previously.

Production of newsprint in Canada during February, 1928, amounted to 189,822 tons and shipments from mills were 188,163 tons, compared with 186,721 tons produced and 186,829 tons shipped in the preceding month, according to the monthly statistical summary of the News Print Service Bureau. Production in the United States in February was 112,302 tons and shipments 109,666 tons, against 119.525 tons produced and 114.211 tons shipped in January, making a total United States and Canadian newsprint productions in February of 302.124 tons and shipments of 297,829 tons. During February 17.045 tons of newsprint were made in Newfoundland and 1.641 tons in Mexico, so that the total North American production for the month amounted to 320,810 tons.

The Canadian mills produced 63,961 tons more of newsprint in the first two months of this year than in 1927, which was an increase of 20 per cent. The United States output was 23,521 tons, or 9 per cent less than in the first two months of 1927; that in Newfoundland 3,181 tons or 10 per cent more, and in Mexico 620 tons more, making a total North American increase of 44,241 tons, or 7 per cent over the first two months of last year. During February the Canadian newsprint mills operated at 86.3 per cent of rated capacity, and the United States mills at 78.8 per cent. Stocks of newsprint at Canadian mills totaled 39,145 tons at the end of February, and at United States mills were 28,499 tons, making a combined total of 67,644 tons, which was equivalent to 4.7 days' average production.

The output of box board in the United States increased during February as compared with the preceding month, totaling 210,305 net tons, against 203,146 tons produced in January last, according to the monthly statistical summary of the U. S. Department of Commerce. Board production in February was at a rate of 87.6 per cent of mills' capacity, contrasted with 84.6 per cent in January. New orders received by mills in February called for 215,259 tons of board, against 203,630 tons in the preceding month, and unfilled orders held by manufacturers at the end of February were for 86,741 tons, against 82,446 tons at the end of January. Shipments of board from mills during February totaled 210,053 tons, compared with 196,275 tons in January, and mill stocks of board at the end of February aggregated 49,472 tons, against 49,172 tons a month previously. Board mills consumed a total of 193,057 tons of waste paper in February, and had stocks amounting to 142,713 tons at the end of that month, contrasted with stocks of 157,185 tons a month earlier.

The January index number for paper production was 104, compared with 104 for December and 118 for January of last year, taking 1919 at 100 per cent, according to the U. S. Department of Commerce.

Newsprint consumption at present is at a high level, and there is a steady movement of supplies from mills into consuming channels. Indications are that at the prevailing rate of gain, consumption of print paper in the United States this year will show about the same amount of increase as in 1927 over 1926. The price tone is firm, and no mention at all is heard in the trade regarding lower quotations or the likelihood of same.

Wrapping paper is enjoying a fairly active market, and sales recently have been of such volume that most kraft wrapping mills are committed several months ahead. No changes of consequence are noted in mill quotations. Tissue is in moderately good call, and holding its own in price. Fine papers are wanted in bigger tonnage; demand has shown quite some improvement, and prices are maintained fully and display a rising tendency. A sharp reduction has been made in prices of vegetable parchment, amounting to about 2 cents per pound, which was due to mill competition, it is said. Board quotations are steady on a basis of $45 per ton delivered in New York City for plain chip and $47.50 for news board, and demand has been seasonably active in recent weeks. There is a better movement of roofing and building papers, reports telling of a substantial increase in consuming and jobbing orders for roofing felt and sheathing paper, and wall board is wanted also in larger volume.

Announcement is made that the Supply & Equipment Association, Inc. of the American Paper & Pulp Industry will hereafter be known as the Supply & Equipment Section of the American Paper and Pulp Association, with offices at 18 East 41st Street, New York.

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Domestic Raw Materials

Papermaking Rags

There is a lack of feature and limited activitly in the market for papermaking rags. This is the period of the year when paper manufacturers hold off purchasing rags insofar as their actual necessities will permit, because they realize that collections of rags increase in the spring and that, as a general thing, with larger quantities of rags coming into the market, they are enabled a little later on to secure supplies at more favorable prices. Whether or not this will prove to be the case this year is a question, since the past winter was an exceptionally mild one and dealers seldom were hampered in their gathering operations, so that collections kept up all during the winter, with the obvious result it seems unlikely that any sizable lots of rags were accumulated by housewives or at other sources of supply.

Meanwhile, demand from mills for nearly all grades of rags is narrow. Dealers and importers are not pressing sales because they have found that such effort seldom avails them anything in the form of larger business. Consumers are buying as their needs arise, and it is just about an impossibility to persuade a paper manufacturer to absorb supplies of rags at present unless he absolutely requires them. Buyers as a rule are getting the rags desired at almost their own prices, so long as they are satisfied to offer within reasonable bounds, and the market condition from a general standpoint—both as concerns the volume of business current and the prices prevailing—is declared by dealers to be distinctly unfavorable for them. Some of the oldest and foremost members of the rag trade assert they have not seen the market so unsatisfactory in many years, and it is said that few concerns handling papermaking rags are realizing any profit at all in the business they are succeeding in negotiating.

In other words, the price position is altogether in favor of consumers of rags, and, with the possible exception of several grades of new cuttings which are in relatively small supply, and which have displayed a firm price tone, any changes that have occurred in market rates have been in a downward direction. Importations of rags for papermaking are on a low level, reflecting the narrow outlet among consuming mills in this country, and also reflecting the fact, according to advices, that a better and higher market exists in Europe than in the United States. Importers report that not in a long time have they experienced so much difficulty marketing rags of virtually all grades from abroad, which indicates that paper mills of the country are succeeding in covering the bulk of their needs with domestic rags and, therefore, are buying little foreign stock.

Prices of roofing rags have eased slightly. Domestic No. 1 packing or cloth strippings are selling at 1.80 cents a pound f. o. b. dealers' shipping points, and perhaps at a bit under this price level, while No. 2 domestic roofing is quoted at 1.50 cents, and foreign dark colored cottons at 1.55 cents ex dock New York. Old white rags are moving in routine amounts only, and are quoted from 5.50 cents upwards a pound at shipping points for No. 1 repacked whites, depending on the quality of packing, and around 2.75 cents for No. 2 repacked. The limited buying of repacked thirds and blues that paper mills are engaging in is at a price level of about 2.25 cents per pound at dealers' points. Old cotton batting is bringing 4.75 to 5 cents a pound at shipping points in the East, and slightly higher in the Middle West.

In new cuttings, a fair movement is reported of No. 1 white shirt cuttings to paper mills at about 11.50 cents a pound f. o. b. dealers' points, and No. 2 packing is bringing around 7.50 cents a pound. Blue overall cuttings are in moderate demand at 6.75 to 7 cents per pound at shipping points, as are light silesias at 7.25 to 7.50 cents, light flannelettes at 8 cents, and unbleached cuttings at 10 to 10.25 cents.

Occasional sales of foreign medium colored cottons, fustians and some other grades are reported, but generally business in imported rags is slow decidedly and the prices quoted from abroad most often are beyond a parity with the ideas of papermakers here.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	11.50-12.00
White shirt cuttings, No. 2	7.00- 8.00
Fancy shirt cuttings	5.50- 5.75
Washables, No. 1	4.40- 4.60
Unbleached muslin	10.00-10.25
White lawns	9.25- 9.50
Overall cuttings, blue	6.75- 7.00
Black silesias	4.50- 4.75
Light flannelettes	8.00- 8.25
Canton flannels, bleached	9.00- 9.25
Canton flannels, unbleached	8.25- 8.50
Shoe cuttings, bleached	8.25- 8.50
Shoe cuttings, unbleached	6.50- 6.75
Light silesias	7.25- 7.50
O. D. khaki cuttings	5.50- 5.75
Mixed khaki cuttings	5.50- 5.25
Corduroy cuttings	3.25- 3.50
Cottonade cuttings	3.25- 3.50
Linens, No. 1, white, foreign	13.00-14.00
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1, repacked	5.50- 6.50
Whites, No. 2, repacked	2.50- 3.00
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.75- 6.00
Thirds and blues, rough	1.75- 1.90
Thirds and blues, repacked	2.15- 2.35
Black stockings	4.00- 4.25
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	4.75- 5.25
Roofing, No. 1 (cloth strippings)	1.75- 1.85
Roofing No. 2	1.45- 1.55
Linsey, garments, foreign	1.70- 1.75
Dark colored cottons, foreign	1.50- 1.60
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.80- 2.00

Rope and Bagging

Paper manufacturers continue to manifest surprisingly little interest in old rope. It is said that mills are using a much larger percentage of kraft pulp in the manufacture of bag and insulating papers than was their custom formerly, with the result consumption of old rope has decreased substantially, so that the market outlet for rope has contracted to a degree where demand is appreciably affected. At any rate, it is apparent that the movement of old rope supplies to paper mills does not begin to measure up to that of former days, and the outlook for demand assuming broader proportions seems dubious. Dealers are endeavoring to obtain 3.25 cents a pound f. o. b. shipping points for No. 1 domestic old manila rope, and 3 cents ex dock New York for foreign old manila, but it is likely that sales are being made below these prices. Strings are in fair call and are reported bringing around a cent per pound at shipping points for mixed strings, and 1.75 cents for sisal strings.

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Western Paper Makers Chemical Co., Kalamazoo, Mich., Pensacola, Fla., Jacksonville, Fla., Savannah, Ga., Comstock, Mich.
C. K. Williams & Company, Easton, Pa., Emeryville, Cal., Malaga, Spain.
Georgia-Louisiana Company, East Point, Ga., Marrero, La.
Superior Pine Products Company, Fargo, Ga., Tarver, Ga.
Empire Size & Chemical Co., Albany, N. Y.
Adirondack Mineral Co., Carthage, N. Y.
Superior Sizing Company, Lockport, N. Y.
Paper Makers Importing Co., Easton, Pa., St. Austell, Cornwall, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ontario
Vera Chemical Corporation, Stoneham, Mass.
Vera Chemical Company, North Milwaukee, Wis.
John Regnier & Son Company, Boston, Mass.
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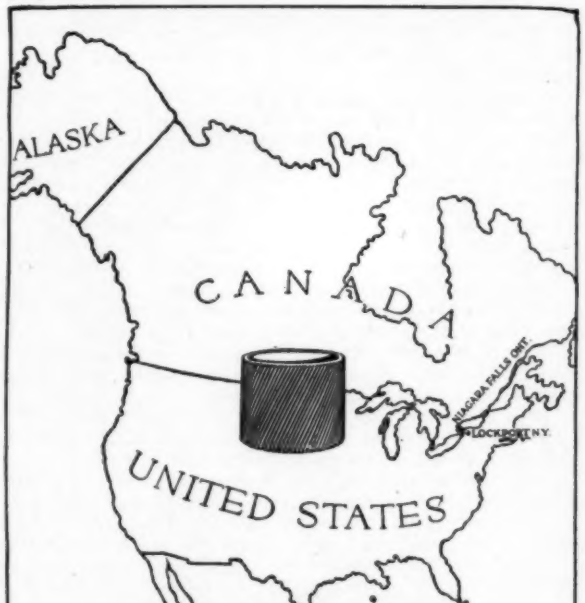

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Old bagging also is in limited demand from paper mills, and market prices are holding their own only with most transactions at the low edge of quotational ranges. No. 1 scrap bagging is quoted at 1.60 cents to slightly higher per pound at dealers' points, and roofing bagging at 1.25 cents.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.65-1.80
Gunny, No. 1 foreign	1.60-1.70
Scrap bagging, No. 1	1.60-1.70
Roofing bagging	1.20-1.30
Wool tares, heavy	2.25-2.50
Wool tares, light	2.00-2.25
Manila rope, No. 1 foreign	2.75-3.00
Manila rope, No. 1 domestic	3.00-3.25
Sisal strings	1.75-2.00
Mixed strings	.90-1.10

Old Paper

A further rise has been recorded in prices of old books and magazines, and the active demand for such stock is easily the feature in the old paper market. Mills in various parts of the country are absorbing supplies of books freely, and are looking for additional supplies, by which is meant that they are going beyond their usual sources of supply seeking to locate a larger tonnage of this class of old paper. Prices have advanced, under the active demand, to where as high as 2.25 cents a pound delivered consuming mills, or in the vicinity of 1.75 to 1.85 cents f. o. b. shipping points, has been paid. No. 1 crumpled book stock is quoted at about 1.45 cents a pound at dealers' shipping points.

The rise in book stock has caused a firming of prices of ledgers and writings, and dealers now usually ask 1.65 cents or higher per pound for the ordinary quality of packing of such stock, with 1.90 cents quoted on extra quality. On the other hand, shavings are more or less neglected by mills, and prices have eased a bit more. Hard white shavings of No. 1 grade are reported available at 2.70 cents a pound upwards f. o. b. shipping points, and soft white shavings from 2.30 to 2.60 cents, depending on the packing. Folded news is selling at 65 cents per hundred pounds at shipping points in the East, and slightly higher in the West, while No. 1 mixed paper is quoted from 45 cents upwards, according to quality of packing and its source. Old kraft paper has moved downward a trifle to where the prevailing market level is 1.90 cents a pound f. o. b. dealers' points.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.70-3.00
Hard white shavings, No. 2	2.50-2.75
Soft white shavings	2.30-2.60
Colored shavings	1.00-1.25
Heavy book, No. 1	1.70-1.85
Crumpled book, No. 1	1.40-1.50
Ledger stock	1.65-1.90
Kraft, No. 1	1.90-2.00
New kraft cuttings	2.60-2.75
Manilas, No. 1	.75- .85
White blank news	1.40-1.50
Overissue news, No. 1	.75- .85
Folded news	.65- .75
Sulphite mill wrappings	.70- .80
Old corrugated boxes	.60- .65
New corrugated box cuttings	.80- .90
Mixed paper, No. 1	.45- .60
Common paper	.35- .40

Mechanical Pulp

It is very evident that prices of Scandinavian ground wood are stiffening and that producers abroad are offering such pulp with a good deal of reserve, doubtless reflecting the strengthening statistical position of the market in Europe created by the shutdown of pulp mills in Sweden and the curtailed production of mechanical pulp in other producing countries on the other side of the Atlantic. However, available supplies of Canadian and domestic ground wood appear

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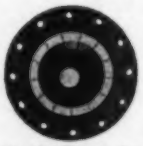
Liquid Conveyed Touches No Metal


Special Flange for Paper Mills.

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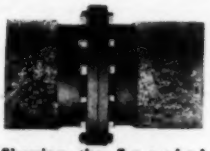
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Jenssen Acid Towers
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ample to fill the wants of consumers, and prices here are ruling more or less stationary, with business developing in a rather routine manner though probably showing a little improvement.

Canadian grinders are quoting prime spruce ground wood for prompt shipment at $23 to $25 per ton f. o. b. pulp mills in the Dominion, yet sales have been reported on a delivered basis which have been at no higher than $21 to $22 a ton at grinding plants. Prime Scandinavian ground wood is quoted around $31 per short ton ex dock American Atlantic ports, and domestic ground wood is somewhat nominal in price at about $27 per ton f. o. b. pulp mills.

Production of ground wood in the United States in January last amounted to 91,751 tons, compared with 86,962 tons in the preceding month. Stocks on hand at producing mills at the end of January aggregated 103,221 tons, contrasted with 101,967 tons a month earlier.

Pulpwood

Activity along routine lines is reported in the pulpwood market, with the situation showing very little change from any angle. Consumers appear to have their requirements covered by contract commitments, and are engaging in limited purchasing in the outside market, yet quotations are maintained and display a fair degree of firmness though ruling on a rather broad range.

Chemical Pulp

The bullish statistical position created for wood pulp abroad by the continued shutdown of mills in Sweden and the resultant stiffening of prices of imported pulps is having some influence of a beneficial nature on the domestic chemical pulp market. There has been no important change in prices of domestic pulps but it is noticed that manufacturers are not so eager to sell as they were, apparently being willing to bide their time in entering commitments, and in some instances at any rate being successful in securing slightly higher prices.

The market is showing more activity. Increased demand is slow in developing, yet it is very evident that some consumers are directing more of their attention to domestic pulp, and it would appear from the way in which circumstances are shaping themselves in the pulp market that domestic pulp manufacturers are due to enjoy much more favorable market conditions over the remainder of this year, as there is likely to be less competition of foreign pulps and a more ready consuming outlet for the output of U. S. producers.

Domestic bleached sulphite is quoted by leading manufacturers at 3.75 to 4 cents a pound f. o. b. pulp mills for the most popular grades, and No. 1 strong unbleached sulphite of news quality is quoted at 2.50 cents to slightly higher and No. 1 book sulphite at 2.75 to 3 cents. Domestic No. 1 kraft pulp is steady at 2.75 to 3 cents at producing plants, and bleached soda pulp is tending to stiffen in price at about 3.25 cents f. o. b. manufacturing points.

The United States produced a total of 118,013 tons of chemical wood pulp in January last, against 117,897 tons in the preceding month. Mill stocks at the end of January amounted to 25,780 tons of all grades of chemical, compared with 25,791 tons at the end of December.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	3.75-4.75
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50-2.75
Unbleached sulphite, No. 1 book	2.75-3.00
Soda pulp, bleached	3.00-3.25
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

Most papermaking chemicals are reported moving in a steady manner and in moderately large volume. Some minor price fluctuations have been recorded but generally quotations are maintained on rather stationary levels. Casein has eased slightly to where domestic casein is reported available down to 16 cents a pound, and the imported product at as low as

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White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.25- 8.00
Machine finished	6.00- 8.00
English finished	6.00- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.00-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.65- 3.80
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .90
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	6.00- 6.50
No. 2 kraft	4.75- 5.25
Southern kraft	4.25- 4.75
Boards—	New York and Chicago
Solid news	50.00-55.00
Straw	52.50-57.50
Plain chip	45.00-47.50
White coated chip	55.00-60.00
Manila coated chip	55.00-60.00
Binder's board	70.00-75.00

Chemicals

(*Continued from page 149*)

16.50 cents, duty paid. Caustic soda is steady quotably at 2.90 to 3 cents a pound in large drums f. o. b. works, and soda ash continues to sell at 1.32½ cents per pound packed in bags. Sulphur quotations are steady at $18 to $20 per long ton at mines.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	4.00 - 4.25
Bleaching powder	2.00 - 2.35
Brimstone (long ton, at mine)	18.00 -20.00
Casein (duty paid)	16.00 -17.00
Caustic soda, spot delivery	2.90 - 3.00
China clay, domestic washed	8.00 -10.00
China clay, foreign	14.00 -20.00
Rosin, Grade E	9.70 -10.00
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½- ....
Starch, papermakers', in bags	3.82 - ....
Talc (ton)	16.00 -18.00

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities when we will endeavor to furnish actual markets.

BONDS	Bid	Asked
A. P. W. Pulp & Power Co. 6s, 1948		100
Abitibi Fibre Co. 6s, 1947	101	101¾
Abitibi Power & Paper Co. 6s, 1931	101	101¾
Abitibi Power & Paper Co. 6s, 1940	104¾	
Advance Bag & Paper Co. 7s, 1943	104½	
American Sales Book Co. 6s, 1939	102½	
American Writing Paper Co. 6s, 1939	75	78
American Book Co. 6s, 1928	99	101
Advance Bag & Paper Co. 6s, 1952	99½	
Bastrop Pulp & Paper Co. 6½s, 1940	104¾	
Brush Moore Paper Co. 6½s, 1937		97½
Beaver Products Co. 7½s	110	112
Beaver Board Co. 8s, 1933	101	
Bedford Pulp & Paper Co. 6½s, 1942	98	100
Belgo-Canadian Paper Co. 6s, 1943	103	104
British Columbia Pulp & Paper Co. 6s, 1950	90	92
Brompton Pulp & Paper Co. 6s, 1935	103	
Brompton Pulp & Paper Co. 6s, 1946	102	104
Brown Co. 5½s, 1946	102	103
Celotex Co. 6s, 1936		96½
Celotex Co. 6½s, 1939	100	
Crown Williamette Paper Co. 6s, 1951		103¼
Canada Paperboard Co. 7s, 1937	98	100
Central Paper Co. 6½s, 1941	86	89
Central Paper Co. 6s, 1933	86	89
Central Paper Co. 7s, 1932	87	92
Champion Fibre Co. 6s, 1941	101½	102¼
Champion Paper Co. 6s, 1945	95	98
Champion Coated Paper Co. 6s	101½	
Columbia River Paper Mills 6s	98	
Defiance Paper Co. 6s, 1939	98	100
Dells Paper & Pulp Co. 6s, 1939	95	98
Donnacona Paper Co. 5½s, 1948	97	98¾
Eastern Manufacturing Co. 7s, 1938	95	97
Escanaba Paper Co. 6s, 1939	96	98
Escanaba Paper Co. 5s, 1928	99	101
Filer Fibre Co. 7s	88	92
Fort William Paper Co. 6s, 1946	101	102
Fraser Co. 6s, 1950	104½	
Fitchburg Paper Co. 5s, 1929	99	
Glatfelter Paper Co. 6s, 1938	104	106
Hammermill Paper Co. 6s, 1939	101½	
Hartje Paper Co. 6s	1½	
Hawley Pulp & Paper Co. 6s, 1946	98	
Hoberg Paper & Fibre Co. 7s, 1937	94½	96½
Howard Smith Paper Co. 7s, 1941	105	
Industrial Fibre Co. 8s	100	102
Itasca Paper Co. 6s	97	
Itasca Paper & Prairie River 5½s	85	90
Jessup & Moore Paper Co. 6s, 1945	85	90
Kalamazoo Vegetable Parchment 6s, 1938	99	101
Manitoba Paper Co. 6½s	103	105
Mead Fibre Co. 7s, 1937	100	
Munising Paper Co. 6s, 1936	98	
Marathon Paper Mills 5½s, 1942	99	101
Marinette & Menominee Paper Co. 7½s, 1936	103½	104½
Mead Pulp & Paper Company 5s	94	
Mengal Company 7s, 1934	103	10o
Mengal Company 7s, 1933	101	
Minnesota & Ontario Paper Co. 6s	99½	101¼
Missisquoi Pulp & Paper Co. 7s, 1929	99½	
Missisquoi Pulp & Paper Co. 6s, 1945	99	
Monroe Paper Products 7½s, 1932	97	99
Murray Bay Paper Co. 6½s	103¼	104
Oswego Falls Paper Co. 6s, 1941	99	102
Parker Young Co. 6½s, 1944	99	
Paper & Textile Machinery Co. 7s	100	103
Paterson Parchment Paper Co. 6s, 1938	101	103½
Peerless Paper Co. 6s	98	100
Penobscot Chemical & Fibre Co. 6s, 1942	102½	104½
Price Bros. 6s, 1943	105	108
Queen City Paper Co. 7s, 1933	97	99
Riordan Pulp & Paper Co. 6s, 1942	102	
River Raisin Paper Co. 6s, 1936	98	101
Roland Paper Co. 6s, 1937	99	101

(*Continued on page 157*)

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PAPER

EXPORTS

Exports of paper and paper products from the United States showed a fair increase—in point of value—in January last as compared with the preceding month and also as compared with the corresponding month last year, according to official statistics compiled and issued by the U. S. Department of Commerce. During January, 1928, total exports of paper of all kinds were valued at $2,422,699, contrasted with exports valued at $2,257,253 in December last, and $2,123,682 in January a year ago.

Exports of newsprint paper reached a total of 3,515,046 pounds of a value of $153,352 in January last, compared with shipments of 2,719,613 pounds of a value of $121,961 in the same month of 1927. Exports of book paper, not coated, were smaller in tonnage but greater in value in January than last year, amounting to 1,594,233 pounds, valued at $131,873, against 1,644,746 pounds of a value of $126,581 in January, 1927. Wrapping paper exports increased substantially from 2,575,638 pounds of a value of $189,565 in January, 1927, to 3,746,073 pounds of a value of $269,591 in the same month of 1928, while writing paper exports also recorded a gain, totaling 1,403,280 pounds of a value of $189,500 in January last, against 801,940 pounds of a value of $136,358 in the similar month a year ago.

Shipments of box board from the U. S. amounted to 3,881,639 pounds, valued at $120,770, last January, contrasted with 3,820,636 pounds of a value of $101,606 in the same month of 1927. Exports of wall board increased to a value of $104,327 in January this year, against $81,161 in 1927, and tissue and crepe paper exports climbed in value to $92,131 last January, compared with $84,046 in January a year ago.

IMPORTS

Wood Pulp

Late advices from abroad state that negotiations between the pulp and paper mill owners and their workers in Sweden have been resumed, and the hope is held out that some agreement will be reached whereby the labor difficulty in the Swedish industry will be smoothed over and the pulp and paper mills enabled to start operating again. However, it is the opinion of most of those in the pulp trade in New York City that a settlement of the strike in Sweden can hardly be effected to permit the mills to reopen before the first of May, at the earliest, and, as a matter of fact, there is no assurance whatever that the trouble in Scandinavia will be ironed out by that date.

The shutdown of the Swedish pulp mills now has lasted three full months, or since January 2. This means that no less than 25 per cent of this year's production of Swedish wood pulp has been taken out of the market, and this is a statistical factor which is beginning to have important influence on the chemical pulp market in the United States. Quoted prices have risen substantially in recent weeks, on both sulphite and kraft pulps, and the market is now pointed distinctly higher. There is the element of danger that contracts which American paper manufacturers have for first open water shipments of pulp from Sweden will be cancelled; it is a fact that most of the Continental pulp mills in Europe are well sold up and are offering further supplies very cautiously, while prices in Europe generally are stiffening and seem destined to go considerably higher.

Quotations on prime bleached sulphite have risen to where importers now ask 3.80 cents a pound in most cases for strictly prime pulp ex dock New York or other American Atlantic ports, and well above this level is quoted for some mill brands. Prime strong unbleached sulphite is up to 2.75 and 2.80 cents a pound on the dock, and easy bleaching sulphite is fetching 2.90 cents. There has been quite a run of demand on kraft pulp and prices have advanced to where importers ask 2.80 cents or higher for prime standard Swedish kraft ex dock New York. Prime ground wood of Scandinavian origin is quoted at $31 per short ton ex dock for dry pulp.

Paper and board manufacturers in the United States are purchasing pulp in a careful manner; obviously so, because they are uncertain regarding forward supplies—that is, whether or not they will receive the pulp they have under contract—and realizing that the market is in a condition where they must exercise caution in buying in order not to run values up against themselves. Nevertheless, sellers are having no trouble at all disposing of any lots of pulp which they have to offer within reasonable price limits as there are buyers ready to absorb any supply to be had at favorable costs. Moreover, it is observed that demand is becoming more insistent gradually.

Importations of chemical pulp into the United States reached a record-breaking level during January, when a total of 140,394 long tons of all grades of chemical was brought into this country. This is believed to be the largest tonnage ever imported in the U. S. in a single month, was valued at $8,076,033, and compared with 137,607 tons of a value of $8,904,355 imported in January last year, which had constituted the previous high point for one month. Imports of ground wood in January amounted to 18,823 long tons, valued at $445,651, contrasted with 16,409 tons of a value of $451,532 in the similar month of 1927.

Current market quotations ex dock New York, and receipts at the port of New York during March follow:

Bleached sulphite, No. 1	3.75	4.00
Unbleached sulphite, strong No. 1	2.70	2.90
Unbleached sulphite, No. 2	2.50	2.65
Easy bleaching sulphite	2.85	3.00
Mitscherlich unbleached, genuine	3.00	3.25
Mitscherlich unbleached, ordinary	2.60	2.75
Kraft, standard Swedish	2.75	2.90
Ground wood, per ton (dry)	31.00	32.00

Castle & Overton, 5,357 bls. from Hamburg and 400 Rotterdam; E. J. Keller Co., 800 bls. from Oslo, 1,328 Hamburg and 800 Bremen; A. P. W. Paper Co., 2,768 tons and 15,874 bls. from Sheet Harbor, N. S.; Atterbury Bros., 1,000 bls. from Oslo; E. M. Sergeant Co., 300 bls. from Oslo and 170 Gothenburg; Chemical National Bank, 150 bls. from Oslo; Chase National Bank, 1,750 bls. from Greaker; Norwegian-American Line Agency, 56 bls. from Oslo; Bulkley, Dunton & Co., 253 bls. from Hamburg, 125 Stockholm and 250 Gothenburg; J. Andersen & Co., 2,690 bls. from Sarpsborg and 2,000 Trieste; Buck, Klaer & Co., 600 bls. from Stockholm; Lagerloef Trading Co., 454 bls. from Hamburg; American Exchange Irving Trust Co., 490 bls. from Trieste; M. Gottesman & Co., 625 bls. from Stockholm and 960 Rotterdam; Philadelphia Girard National Bank, 375 bls. from Greaker; Borregaard Co., 336 bls. from Sarpsborg; Parsons & Whittemore, 600 bls. from Gothenburg; Price & Pierce, 318 bls. from Gothenburg; Order, 4,990 bls. from Hamburg, 5,165 Hango, 254 Copenhagen, 1,200 Oslo, 1,561 Helsingfors and 3,600 Greaker.

Paper Stock

Imports of papermaking rags into the United States in January last, according to official Government figures, showed a gain over importations in the same month of 1927, totaling 37,631,368 pounds, valued at $681,540, compared with 33,528,828 pounds of a value of $726,376 in January a year ago. Judging from receipts through the port of New York, arrivals of rags during March were small as fewer and less than

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usual quantities were imported at New York last month. Imports of old rope and bagging were fair during March, and receipts of miscellaneous paper stock were comparatively large.

Imports of all kinds of paper stock other than wood pulp at New York in March, 1928, these data being taken from manifests of steamers reaching that port during the month follow:

Old Rope—Brown Bros. & Co., 296 coils and 174 bls.; Ellerman's Wilson Line, 221 coils; United Fibre Co., 60 rolls; Chase National Bank, 14 lbs.; New York Trust Co., 71 bls. and 27 rolls; W. Schall & Co., 206 bls.; Anglo-South American Trust Co., 55 bls.; Alfred Bloch & Co., 97 coils and 42 bls.; George W. Millar & Co., 97 bls. and 95 coils; N. E. Berzen, 73 coils; E. J. Keller Co., 41 bls.; Order, 177 coils and 120 bls.

Old Bagging—Warren Manufacturing Co., 68 bls.; Castle & Overton, 450 bls.; J. D. Smith Co., 40 bls.; Darmstadt, Scott & Courtney, 64 bls.; American Exchange Irving Trust Co., 85 bls.; Chase National Bank, 70 bls.; E. Butterworth & Co., 208 bls.; E. J. Keller Co., 179 bls.; Order, 443 bls.

Rags—Paul Berlowitz, 252 bls.; Alexander H. Searle, Inc., 427 bls.; E. Butterworth & Co., 172 bls.; Castle & Overton, 206 bls.; H. Burrows, 43 bls.; Katzenstein & Keene, 76 bls.; J. Cohen & Co., 30 bls.; American Wool Stock Company, 213 bls.; Evermann & Stern, 8 bls.; Victor Galaup, Inc., 265 bls.; Jaffe Products Co., 67 bls.; E. J. Keller Co., 800 bls.; General Fiber Co., 9 bls.; Spaulding Fibre Co., 98 bls.; Lavin & Rosenberg, 4 bls.; Bank of New York & Trust Co., 207 bls.; Canadian Bank of Commerce, 206 bls; Chase National Bank, 411 bls.; State Bank, 29 bls.; Banca Commerciale Italiana Trust Co., 76 bls.; American Exchange Irving Trust Co., 276 bls.; Manufacturers Trust Co., 27 bls.; Fidelity Trust Co., 88 bls.; Chemical National Bank, 58 bls.; Equitable Trust Co., 76 bls.; French-American Banking Corp., 10 bls.; New York Trust Co., 302 bls.; National City Bank, 35 bls.; C. B. Richard & Co., 42 bls.; A. C. Fetterolf, 21 bls.; American Express Co., 63 bls.; American Overocean Corp., 96 bls.; Van Oppen & Co., 85 bls.; A. W. Fenton, Inc., 476 bls.; Goldman, Sachs & Co., 255 bls.; Amtorg Trading Co., 3 bls.; U. S. Forwarding Co., 116 bls.; Brown Bros. & Co., 62 bls.; A. F. Roloson, 102 bls.; R. F. Downing & Co., 57 bls.; Order, 1,025 bls.

Miscellaneous Paper Stock—Daniel I. Murphy, Inc., 398 bls.; Alexander H. Searle Inc., 352 bls.; Brown Bros. & Co., 46 bls.; Equitable Trust Co., 183 bls.; Alfred Bloch & Co., 121 bls.; American Exchange Irving Trust Co., 33 bls.; Salomon Bros. & Co., 80 bls.; Daniel M. Hicks, Inc., 328 bls.; Beckman, Dawson & Co., 143 bls.; C. R. Spence & Co., 89 bls.; New York Trust Co., 235 bls.; Bank of the Manhattan Co., 339 bls.; Philadelphia Girard National Bank, 515 bls.; Victor Galaup, Inc., 451 bls.; E. Butterworth & Co., 188 bls.; E. Pullan, 12 bls.; Bulkley, Dunton & Co., 17 bls.; Castle & Overton, 876 bls.; Robert Bishop Mfg. Co., 86 bls.; S. Birkenstein & Sons, 579 bls.; Joseph Chalfin & Co., 186 bls.; Whaling Waste Products Co., 262 bls.; Van Oppen & Co., 29 bls.; I. Abela & Co., 86 bls.; Union Bank & Trust Co., 195 bls.; C. B. Richard & Co., 49 bls.; Banca Commerciale Italiana Trust Co., 166 bls.; R. Canoval & Son, 43 bls.; E. J. Keller Co., 822 bls.; Darmstadt, Scott & Courtney, 82 bls.; A. W. Fenton, Inc., 116 bls.; George W. Millar & Co., 363 bls.; Chase National Bank, 491 bls.; E. Mayer, 269 bls.; Amsinck, Sonne & Co., 122 bls.; Order, 1,618 bls.

Paper

Importations of paper into the United States in January, 1928, showed a gain in point of value over the receipts in the corresponding month last year, according to official statistics issued by the U. S. Department of Commerce in Washington. During January last, imports of paper of all kinds totaled in value $13,017,337, contrasted with imports valued at $12,265,321 in January, 1927. Of this total, newsprint imports constituted the major part, receipts of such paper being valued at $11,646,701 last January, against $11,028,972 in the same month a year ago.

Paper imports during March were on a fair scale, judging from arrivals at the port of New York. There were some sizable shipments of printing paper, wrapping, cigarette, hanging and other grades, as well as continued large receipts of strawboard, mostly from Holland. Imports of all kinds of paper at the port of New York in March, 1928, these data being taken from manifests of steamers reaching that port during the month, follow:

Printing—Perkins-Goodwin Co., 141 reels from Bremen and 723 reels Hamburg; Perry, Ryer & Co., 31 cs. from Glasgow; Journal of Commerce, 111 reels from Hango; Walker, Goulard, Plehn Co., 600 bls. from Hamburg and 284 rolls Bremen; B. F. Drakenfeld & Co., 124 cs. from Liverpool; P. C. Zuhlke, 52 cs. from Antwerp; E. Dietzgen & Co., 238 cs. from Rotterdam, 101 cs. Hamburg and 22 cs. Havre; Hudson Trading Co., 316 reels from Gothenburg and 256 rolls Oslo; J. A. Raber, 130 bls. from Gothenburg; New Haven Times, 367 reels from Gothenburg; J. J. Bernitz, 58 bls. from Hamburg; Keuffel & Esser Co., 38 rolls from Hamburg; Oxford University Press, 35 cs. from Liverpool; Robert Hoe & Co., 2 bls. from London; W. J. Byrnes & Co., 5 cs. from Havre; Box Board and Lining Co., 120 reels from Bremen; C. Steiner, 10 cs. from Rotterdam; F. Henjes, Jr., Inc., 126 reels from Hamburg; H. Reeve Angel & Co., 259 bls. from Helsingfors; Parsons & Whittemore, 829 reels from Helsingfors; American Exchange Irving Trust Co., 312 reels and 21 bls. from Gothenburg; P. Puttmann, 32 cs. from Antwerp; Order, 1,521 reels and 396 bls. from Bremen, and 911 rolls and 227 bls. from Hamburg.

Wrapping—Manufacturers Trust Co., 36 cs. from Hamburg; Robert Wilson Paper Corp., 32 cs. from Glasgow; F. C. Strype, 3 cs. from Antwerp; C. K. MacAlpine & Co., 78 reels from Gothenburg; M. M. Cohen, 40 bls. from Gothenburg; Wilkinson Bros. & Co., 34

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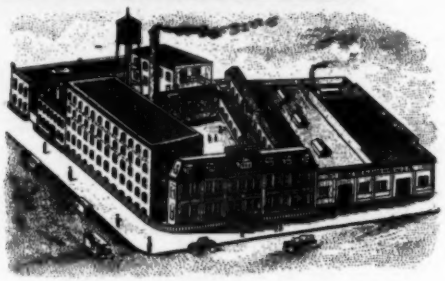

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DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

bls. from Gothenburg; Insight Paper Co., 867 reels from Oslo; Beekman Paper and Card Co., 8 cs. from Bremen; D. S. Walton & Co., 675 rolls and 37 bls. from Hamburg; A. Montana & Co., 385 bls. from Rotterdam; Standard Products Corp., 34 pkgs. from Antwerp; Schenkers, Inc., 2 bls. from Bremen; Chemical National Bank, 660 bls. from Oslo; Birn & Wachenheim, 34 cs. from Antwerp; Order, 1,255 bls. from Antwerp.

Cigarette—Standard Products Corp., 438 cs. from Havre; American Tobacco Co., 1,200 cs. from Bordeaux; British-American Tobacco Co., 32 cs. from Liverpool and 266 cs. from Havre; DeManduit Paper Corp., 579 cs. from St. Nazaire and 398 cs. Havre; P. J. Schweitzer, Inc., 124 cs. from Marseilles; Bank of the Manhattan Co., 30 cs. from Lisbon; Surbrug Co., 20 cs. from Havre; P. Lorillard Co., 200 cs. from Marseilles.

Writing—Guibont Freres & Co., 34 cs. from Southampton and 12 cs. Havre; W. J. Byrnes & Co., 3 cs. from Havre; Frederick Loeser & Co., 10 cs. from Havre; R. Weill & Co., 2 cs. from Havre.

Filter—J. Manheimer, 131 bls. from Southampton; H. Reeve Angel & Co., 4 cs. from Southampton and 25 cs. London; United Hardware & Tool Corp., 48 cs. from Rotterdam; Lunham & Reeve, 7 cs. from London; C. Sleicher & Schull Co., 12 cs. from Hamburg; E. Fougera & Co., 87 cs. from Bordeaux; A. Giese & Son, 4 cs. from Hamburg.

Drawing—Keuffel & Esser Co., 117 cs. and 93 rolls from Hamburg, 3 cs. Southampton and 11 cs. Rotterdam; International Forwarding Co., 40 cs. from Antwerp; H. Reeve Angel & Co., 6 cs. from London; Steffens, Jones & Co., 3 cs. from Hamburg; Order, 2 cs. from Hamburg.

Tissue—Meadows, Wye & Co., 2 cs. from Liverpool; Schenkers, Inc., 78 cs. from Hamburg; B. F. Drakenfeld & Co., 3 cs. from Liverpool; J. Otero, 5 cs. from Liverpool; F. C. Strype, 2 cs. from Helsingfors; Baldwin Universal Co., 7 cs. from Liverpool; D. C. Andrews & Co., 19 cs. from Liverpool; G. W. Sheldon & Co., 3 cs. from London; F. B. Vandegrift & Co., 22 cs. from Liverpool.

Hanging—C. A. Haynes & Co., 269 pkgs. from London and 47 bls. Liverpool; F. J. Emmerich & Co., 43 bls. from London, 73 bls. Hamburg, 5 bls. Havre and 23 bls. Liverpool; Globe Shipping Co., 68 bls. from Hamburg; A. C. Dodman, Jr., Inc., 2 cs. from Havre, 9 pkgs. Southampton and 41 pkgs. Liverpool; W. H. S. Lloyd & Co., 25 pkgs. from Liverpool and 4 bls. London; J. E. Bernard & Co., 44 pkgs. from Antwerp; R. F. Downing & Co., 9 bls. from London and 7 cs. Havre; F. Blank & Co., 13 cs. from Hamburg; F. A. Binder, 14 bls. from Bremen; W. P. Nelson & Co., 2 cs. from Hamburg; Schmidt, Pritchard & Co., 3 bls. from Hamburg; Order, 5 bls. from Hamburg, 14 cs. Southampton and 13 bls. Liverpool.

Photo—P. C. Zuhlke, 30 cs. from Rotterdam and 280 cs. Antwerp; Globe Shipping Co., 352 cs. from Bremen and 18 cs. Rotterdam; L. Grosworkson, 5 cs. from Havana; J. J. Gavin & Co., 6 cs. from Liverpool; Gevaert Co. of America, 318 cs. from Antwerp; American Express Co., 50 cs. from Antwerp; Medo Photo Supply Co., 3 cs. from London; J. H. Schroder Banking Corp., 82 cs. from Bremen.

Board—Perkins-Goodwin Co., 647 rolls from Rotterdam; Robert Wilson Paper Corp., 224 reels from Rotterdam; Adrian Vuyck, 1,358 reels from Rotterdam; Haas Bros., 3 cs. from Rotterdam; Chatham & Phenix National Bank, 70 bls. from Gothenburg; Cheramy, Inc., 4 cs. from Southampton; C. K. MacAlpine & Co., 72 bls. from Gothenburg; Coty, Inc., 83 cs. from Havre; State Bank, 112 reels from Rotterdam; Premier Flong Co., 61 cs. from Hamburg; American Express Co., 163 cs. from Hamburg; H. Wolff, 405 pkgs. from Rotterdam; Guaranty Trust Co., 134 rolls from Rotterdam; Houbigant, Inc., 20 cs. from Southampton; Wilkinson Bros. & Co., 30 rolls from Gothenburg; Order, 174 rolls from Rotterdam and 78 cs. Hamburg.

Miscellaneous—International Forwarding Co., 83 cs. from Hamburg, 28 bls. Rotterdam and 8 cs. Antwerp; Central Union Trust Co., 34 cs. from Hamburg; National City Bank, 44 bls. from Hamburg; American Exchange Irving Trust Co. 36 cs. from Hamburg; Japan Paper Co., 52 cs. from Genoa; P. H. Petry & Co., 8 cs. from Hamburg, 35 cs. Rotterdam, 4 cs. Bremen and 10 cs. Havre; Cie. Generale Trans., 10 cs. from Havre; Coenca-Morrison Co., 8 cs. from Havre and 5 cs. Southampton; Tice & Lynch, 2 cs. from Havre; Globe Shipping Co., 7 cs. from Havre; Keller-Dorian Paper Co., 76 cs. from Havre; Danley Co., 9 cs. from Havre; Defiance Sales Co., 8 cs. from Havre; Whiting-Patterson Co., 53 cs. from Southampton; Quality Art Novelty Co., 14 cs. from Bordeaux; J. Beckhardt & Co., 5 cs. from Rotterdam; Steiner Paper Corp., 39 cs. from Rotterdam; Hensel, Bruckman & Lorbacher, 32 cs. from Bremen and 2 cs. Rotterdam; S. Gilbert, 25 cs. from Rotterdam and 24 cs. Bremen; F. Murray Hill, Inc., 10 cs. from Bremen; Borden & Riley Paper Co., 14 cs. from Antwerp; E. M. Sergeant Co. 16 cs. from Gothenburg; F. L. Kraemer & Co., 27 cs. from Bremen; Richard Shipping Co., 5 cs. from Bremen; Brown Bros. & Co., 21 cs. from Hamburg; American Express Co., 28 cs. from Hamburg; Richardson Bros., 3 cs. from Liverpool; Meadows, Wye & Co., 25 cs. from Rotterdam; G. W. Sheldon & Co., 2 cs. from London; Martin & Bechtold, 25 cs. from Bremen; J. Beckmann, 3 cs. from Rotterdam; Tamm & Co., 16 cs. from Rotterdam; Dingelstedt & Co., 11 cs. from Rotterdam; H. D. Catty & Co., 3 cs. from Rotterdam; Whitfield Paper Works, 35 cs. from Kobe; G. W. Sheldon & Co., 8 cs. from London; Canson & Montgolfer, 27 pkgs. from Havre; Milton Snedeker Corp., 10 cs. from Hamburg; H. Reeve Angel & Co., 13 cs. from London.

Market Quotations

(*Continued from page 151*)

BONDS	Bid	Asked
St. Regis Paper Co. 6½s	99	101
St. Regis Paper Co. 6s, 1931	101	102
St. Anne Paper Co. 6½s, 1946	103	104½
St. Croix Paper Co. 5s, 1928	99	
St. Helens Pulp & Paper Co. 6½s, 1941	99	
St. Lawrence Paper Mills 6s, 1931	102¼	104
St. Lawrence Pulp & Lumber Co. 6s, 1933	7	16
Spruce Falls Power & Paper Co. 5½s		100
Spanish River Pulp & Paper 6s, 1931	109½	
Stevens & Thompson Paper Co. 6s, 1942	93	94
Southern Advance Bag & Paper Co. 6s, 1947	97	
Taggart Bros. 6s, 1944	95	100
Tait Paper & Color Industries 6s	90	96

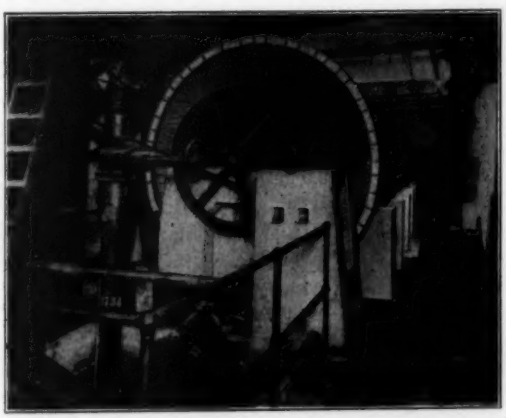
What he *first* sees in your paper—

The "finish" introduces your sheet to the paper buyer. Does your sheet make a good impression? Quartz Quality Silicate* helps your paper to put its best foot foremost. A hard, smooth surface, snap and body result when the right silicate in the proper amount is used in the beater.

*Ask for "A-Syrup" or "S" Brand.

Philadelphia Quartz Co.
Philadelphia
Works

Chester, Pa. — St. Louis, Mo.
Rahway, N. J. — Anderson, Ind.
Gardenville, N. Y. — Kansas City, Kans.
Utica, Ill.



Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

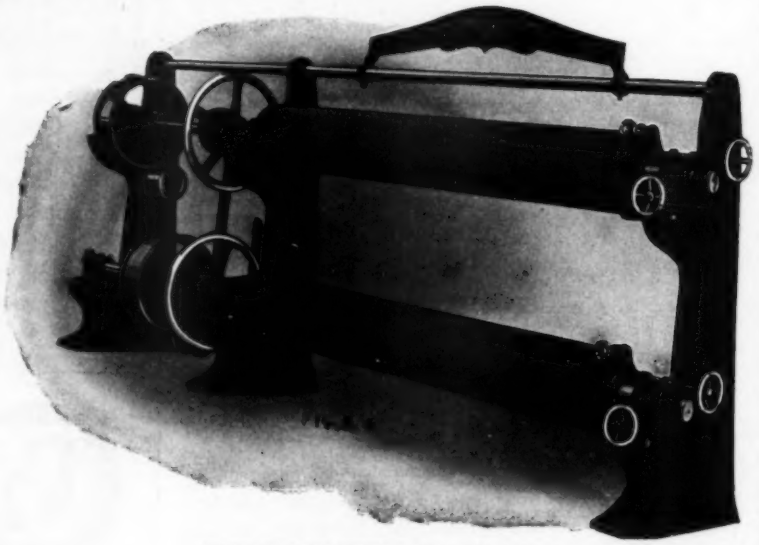
DESIGNERS AND BUILDERS OF

PAPER MAKING **MACHINERY** PAPER CUTTING

PAPER BAG MAKING

THE
SMITH
AND
WINCHESTER
MFG. CO.

ESTABLISHED 1828
AT
SOUTH WINDHAM
CONNECTICUT



TWO DRUM REEL—Heavy Pattern

WHEN IN NEED OF SUPERIOR TOP FELTS

VELURE TENAX TOPS

WILL INSTANTLY SOLVE YOUR PROBLEM

NONUSERS ARE THE LOSERS

MADE ONLY BY

LOCKPORT FELT CO.

NEWFANE, NEW YORK

Ticonderoga Pulp & Paper Co. 6s, 1940	100	102
Tonawanda Paper Co. 5½s	99	101
United Wall Paper Co. 6s, 1947	96	98
Wayagamack Pulp & Paper Co. 6s, 1951	OW	
Watab Paper Co. 6½s, 1942	102	104
Whitaker Paper Co. 7s, 1938	108	
Waterway Paper Products 6s, 1931	99	101
Westfield River Paper Co. 7s	89	93
Warren (S. D.) 6s, 1945	103½	
Wm. Whitmer Sons-Parsons Pulp & Lumber 8s	15	20
Waterway Paper Products 6s, 1931	101	

STOCKS	Bid	Asked
American Book Co. Common	150	155
American Sales Book Co. Pfd.	107	109
American Sales Book Co. Common	73	75
Androscoggin Pulp Co. Common	30	
Androscoggin Pulp Co. Pfd.	90	
Belgo Canadian Paper Co. Pfd.	106	110
British Columbia Pulp & Paper Common	4	8
British Columbia Pulp & Paper Preferred	65	
Brompton Pulp & Paper Co. Common	64	65
Canada Paperboard Co. Pfd.		94
Champion Fibre Co. Pfd.	107½	
Champion Coated Paper Co. Common		125
Champion Coated Paper Co. Preferred	105	107
Chemical Paper Mfg. Co. 1st Pfd.	90	
Chillicothe Paper Co. Pfd.		105
De Jonge (Louis) Co. Pfd.	95	97
Dryden Paper Co. Pfd.	42	44
Diem & Wing Preferred	92	97
Downington Paper Co. Pfd.	101	
Donnacona Paper Co. Pfd.	103	
Donnacona Paper Co. Common	93	
Eastern Manufacturing Co. 1st Pfd.	40	
Eddy Paper Co. Common	30	
Escanaba Paper Co. Pfd.	40	
Escanaba Paper Co. Common	4	
Folding Box Units	30	
Fidalgo Pulp Mfg. Co. Common	75	
Glatfelter Paper Co. Pfd.	103	107
Great Northern Paper Co.	84	86
Gair (Robt.) Co.	15	18
Hawley Paper Co. Pfd.	96	
Hammermill Paper Mills Pfd.	109	
Holyoke Card & Paper Co. Pfd.	170	
Hinde & Dausch Co. Pfd.	103	
Hinde & Dausch Co. Common	180	
Indiana Flooring Co. Common		7
International Pulp Co. Pfd.	72	
International Textbook Co.	30	
Jessup & Moore Paper Co. 1st Pfd.	35	40
Jessup & Moore Paper Co. Common	5	15
Marathon Paper Mills Common	125	
Minnesota & Ontario Paper Co. Pfd.	75	80
Missisquoi Pulp & Paper Co. Pfd.	93	98
Munising Paper Co. Pfd.	80	90
Munising Paper Co. Common	24½	30
Morris Paper Co. Units	150	
Northern Paper Mills Co.	30	
National Paper & Type Co. Pfd.	77	83
Oglesby Paper Co. Pfd.	101½	
Occident Paper Co. Pfd.		15
Oxford Paper Co. Pfd.	109½	110½
Oxford Paper Co. Common	170	180
Parker Young Co. Pfd.	88	92
Port Alfred Pulp & Paper Common	112	
Port Alfred Pulp & Paper Pfd.	105	
Penobscot Chemical Fibre Co. Common	75	80
Price Bros. Common	90	
Package Paper & Supply Units	22	
Robertson Paper Co. Pfd.	6	
Rogers Paper Co.	45	50
Southern Paper Co. 2nd Pfd.	OW	
Sorg (Paul) Paper Co. Pfd.	100	
Sorg (Paul) Paper Co. Common		OW
St. Regis Paper Co. Pfd.	104½	105½
St. Croix Paper Co. Common	160	170
United States Envelope Co. Common	315	330
United Wall Paper Co. Pfd.	90	95
West Virginia Pulp & Paper Common	54	58
West Virginia Pulp & Paper Pfd.	102	105
West Virginia Timber Co. Pfd.	90	96
Watervliet Paper Co.	10	20
Watson (H. F.) Paper Co.	125	
Wayagamack Paper Co.	104	108

The Pope brushing engine and other Pope machines and appliances formerly manufactured by the Norwood Engineering Co., are now being made by Carthage Machine Co., builders of paper and pulp machinery, Carthage, N. Y. Mr. Pope is connected with the company in the sales and development departments of the Pope equipment.

TRADE MARK

B

Registered

DIAMOND B SPLICING TISSUE

HIGHEST QUALITY

SPECIALLY MADE FOR THE PAPER TRADE

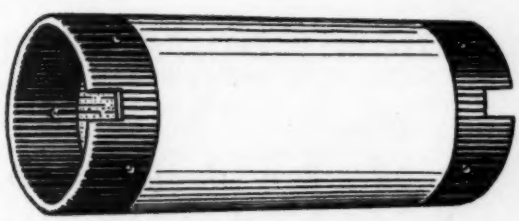
PRICES ON APPLICATION

BEMIS ASSOCIATES INC.

WATERTOWN, MASS.

ELIXMAN PAPER CORE CO., INC.

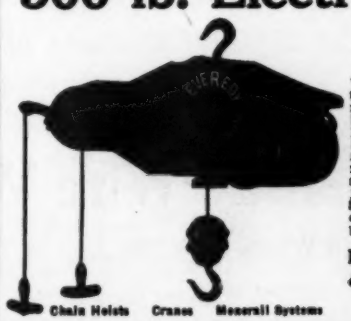
Corinth, N. Y. U. S. A.



Canadian Elixman Co., Ltd., Hamilton, Ontario

500 lb. Electric Hoist

$225.00



This Everedy Hoist is the most accessible hoist made. Light—500 lb. hoist weighs 225 lbs.; 1000 lb. hoist 250 lbs. Speedy — 40 feet per minute A. C., 35 feet per minute D. C. Limit stop at top and bottom adjustable to any point. Suspended wherever chain or air hoist is placed.

READING CHAIN & BLOCK CORP.

READING, PA.

Chain Hoists Cranes Monorail Systems

Putting into the work those hidden qualities revealed in service.

Every few inches of the roll must be tested by the Plastometer to make sure of unvarying density.

Uniformity

The vision of the craftsman may vary, but not the Plastometer—it tells the truth with uncanny accuracy. Even more often than seems necessary, every few inches of the roll are tested to insure unvarying accuracy.

The confidence that our customers place in us to recover their rolls in the shortest possible time consistent with high quality work, leads us to believe we can please you.

Send us your next roll, and let us give you a demonstration of uniformity—with speed.

The Cincinnati Rubber Mfg. Co.
CINCINNATI, OHIO

Lindsay Spiral Weave Fourdrinier Wires

(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

Collinwood Station CLEVELAND, OHIO

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 29786—Paper milk bottles. London, England. Agency desired.

No. 29784—Kraft paper in carload lots. Piedras Negras, Mexico. Purchase desired.

No. 29785—Vulcanized fiber. Hamburg, Germany. Purchase and agency desired.

No. 29850—Rosin, and caustic soda. Sao Paulo, Brazil. Agency desired.

No. 29967—Newspapers, overissue. Cawnpore, India. Purchase desired.

No. 29933—Newspapers, overissue, strictly white. Medan, Sumatra. Purchase desired.

No. 29969—Paper box boards and paper box manufacturing supplies. Toronto, Canada. Agency desired.

No. 29965—Felt blankets for paper and pulp mills. Tallinn, Estonia. Agency desired.

No. 30080—Newspapers, old, 140,000 pounds. Kobe, Japan. Purchase desired.

No. 30003—Writing and wrapping paper and oil paper. Ahmedabad, India. Purchase desired.

No. 30172—Bond writing papers. Lausanne, Switzerland. Purchase and agency desired.

No. 30171—Wall board, and roofing and building papers. Caracas, Venezuela. Agency desired.

No. 30114—Sulphur and sulphuric acid. Toronto, Canada. Agency desired.

Now the Gummed Industry's Association

The Gummed Industry's Association is the new name adopted for the National Association of Gummed Tape Manufacturers, of which Irving McHenry, president of the Mid-States Gummed Paper Company, Chicago, is president; E. C. Smith, sales manager of the Nashua Gummed & Coated Paper Company, Nashua, N. H., is vice president and George Goodsir, eastern representative of the Mid-States Gummed Paper Company is temporary secretary-treasurer.

It was deemed necessary to expand the scope of activities of the former National Association of Gummed Tape Manufacturers to take in the manufacturers of gummed cloth tapes and flat gummed paper. Heretofore the association represented only the kraft paper tape interest of mills in membership.

Employment in the Paper Industry

Employment in the paper and pulp industry has averaged somewhat higher than general industry during the past few years according to the Department of Labor indexes on employment. This same condition holds true in the matter of payrolls.

The following table shows the average yearly index of general industry as compared to the average index for the paper and pulp industry (monthly average for 1923=100.)

EMPLOYMENT
(Yearly Average.)

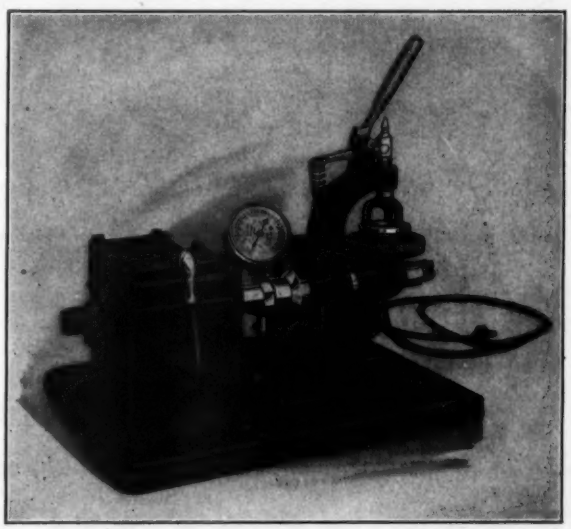
	General Industry Index	Paper and Pulp Index
1927	88.5	93.3
1926	91.9	95.6
1925	91.2	94.4
1924	90.3	94.3

Total payrolls in the paper and pulp industry ran above the level of general industry as the following average of yearly payroll index for general industry and paper and pulp industry illustrated (monthly average for 1923=100.)

TOTAL PAYROLL

	General Industry Index	Paper and Pulp Index
1927	92.4	99.0
1926	95.8	102.5
1925	93.6	99.2
1924	90.6	96.8

POSITIVE ACCURACY
In Every Test With
THE MULLEN
Motor-Driven
PAPER TESTER



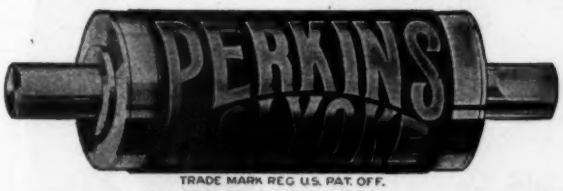
The Mullen Paper Tester is universally recognized as the most efficient device known for ascertaining the bursting strength of paper and similar materials.

The Mullen Motor-Driven Paper Tester indicates actual bursting strength of paper irrespective of any other factor.

—Quick in Action
—Easily Operated
—Perfect Uniformity
—Eliminates the Human Element

Descriptive folder gladly sent to you upon request.

B. F. Perkins & Son, Inc., Holyoke, Mass.

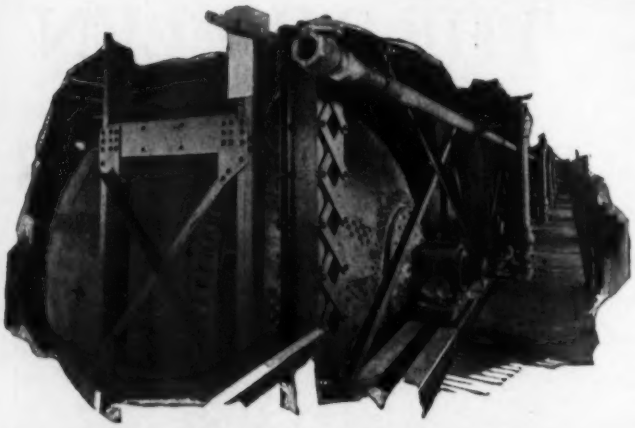


TRADE MARK REG U.S. PAT. OFF.

COTTON ROLLS - PAPER ROLLS - EMBOSSING ROLLS - CHILLED IRON ROLLS - GRANITE PRESS ROLLS - WEB SUPERCALENDERS - GLASSINE SUPERCALENDERS - FRICTION CALENDERS EMBOSSING CALENDERS - SHEET CALENDERS - PLATERS - MULLEN PAPER TESTERS TENSILE TESTERS - VENTILATING FANS - RAG CUTTERS - STOCK CUTTERS - PAPER DAMPENERS BLEACH EJECTORS

BIGGS ROTARIES

Globe and Cylinder



Old experienced paper mill men know Biggs paper mill equipment from actual experience. There's scarcely a mill of any consequence without at least one Biggs Rotary Boiler or Digester.

Biggs is also an equally dependable source of supply for stacks, breechings, tanks, pipe and general steel plate construction of every kind.

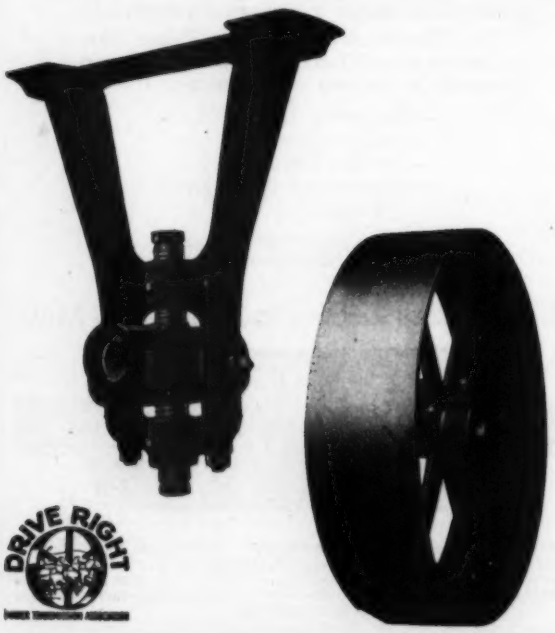
The Biggs Rotary Boiler Book gives full details. Write for your copy today.

THE BIGGS BOILER WORKS COMPANY
General Offices and Works: Akron, Ohio
Eastern Sales Office: 300 Madison Ave., New York City
Western Sales Office: 35 South Dearborn St., Chicago, Ill.

The Biggs Boiler Works Co. Akron Ohio
Trade Mark Registered

TANKS AND GENERAL STEEL PLATE WORK

WOOD'S POWER TRANSMISSION MACHINERY



DRIVE RIGHT

It is good management to place responsibility for merit of a product, or a specialized service, with that organization which works with heart and mind to insure the utmost satisfaction from the service their product renders throughout years of use.

Such an organization is the T. B. Wood's Sons Co. For more than seventy years we have served the manufacturers of this country in solving their problems of Power Transmission, and installing approved Power Transmission machinery and equipment.

Whenever improvements in your Power Transmission equipment are undertaken with the object of increasing production and lowering cost—thereby in time returning the original investment—we will gladly place our experience at your service without obligation.

T. B. Wood's Sons Co.
Chambersburg, Pa.

Makers of Shafting, Hangers, Couplings, Rope Drives, Pulleys, Friction Clutches, Pillow Blocks, Flexible Couplings, Conveyors and Ball Bearings.